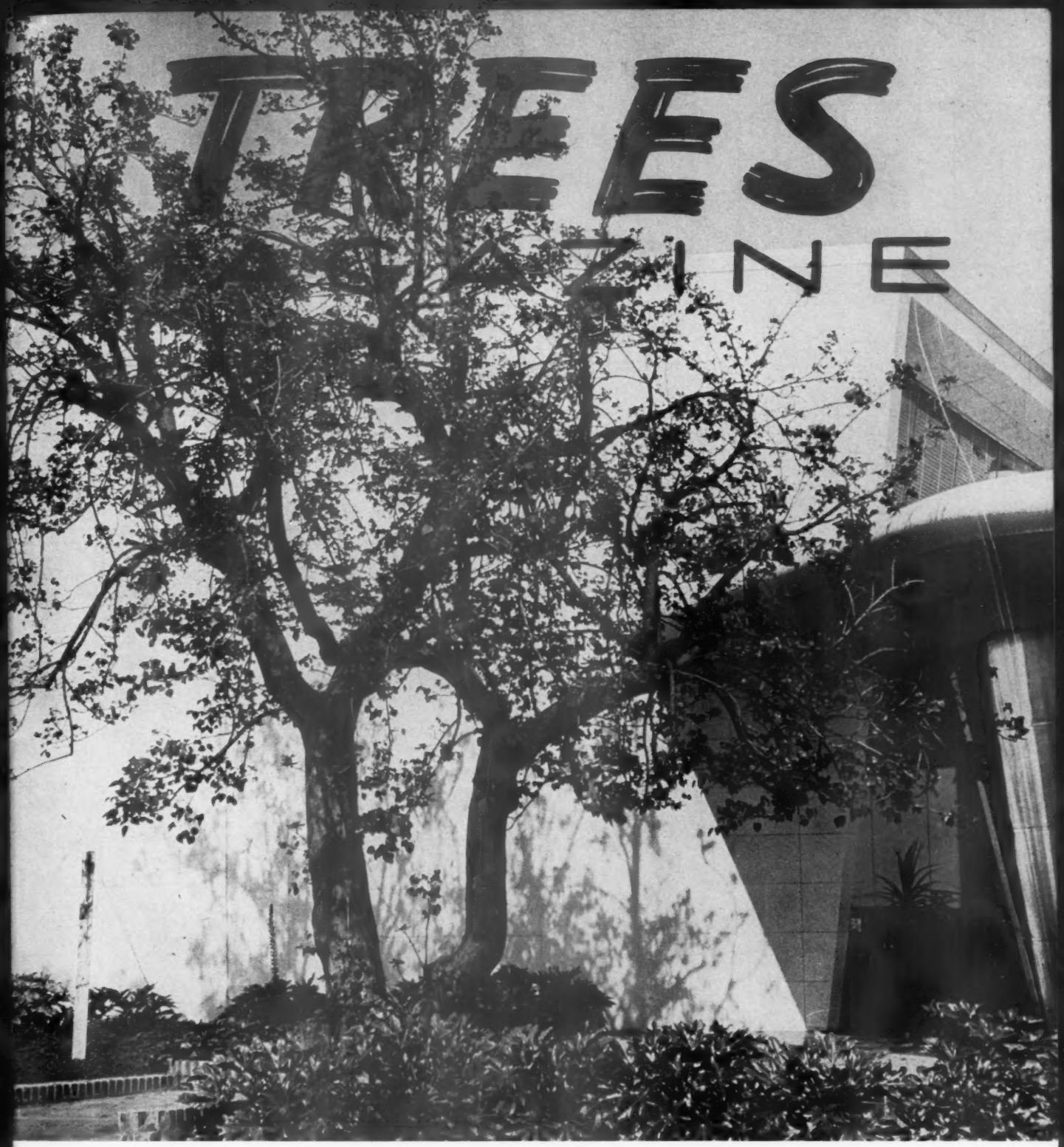
TREES MAGAZINE



Beautiful Coral Tree at McCulloch Motors Plant in Los Angeles (See Page 3)

20th Anniversary Meeting – Western Shade Tree Conference, Santa Monica, May 13-16

How A Tree Grows — *Theodore T. Kozlowski*

Grass Inhibition With Maleic Hydrazide — *John W. Zukel*

March-April, 1953 — *The Journal of American Arboriculture* — Vol. 13. No. 3

POWER The McCulloch 4-30 saw has 4 *brake* horsepower! (There are many ways to measure or claim horsepower. McCulloch saws are rated exclusively by accurate dynamometer.)

LIGHT WEIGHT Weight is only 30 pounds, complete with 14-inch blade and chain. No other saws of more than 3 hp are this light!

BALANCE Weight is properly balanced on each side of blade for easy use in all positions—bucking, limbing, felling. Balanced for easy carrying, too.

ANGLE CUTTING Swing it upside down, blade up, blade down, any position you want. *IT ALWAYS CUTS FULL POWER WITHOUT ADJUSTMENT.*

SPEED Equipped with exclusive new McCulloch high-speed Saber-tooth cutter chain, the 4-30 has sensational speed; it cuts big trees and logs in *seconds!*

New McCULLOCH chain saw

The slick, quick tool for one-man woodcutting

McCulloch Motors presents the powerful, smooth Model 4-30 gasoline-powered chain saw. It is a professional-quality saw of advanced design, built for fast, all-day sawing in timber up to 5 feet in diameter.

MODEL **4-30**

LOW PRICE $325, f.o.b. Los Angeles. In many localities, this saw can pay for itself in one week!

some other features:

Automatic clutch... Kick-proof automatic-rewind starter... Chrome-plated cylinder wall... Chrome-plated saber steel blade... Built-in oiler... Positive chain tension control... Grouped engine controls, including starting primer button; no choking required.

Manufactured and guaranteed by the world's largest builders of power chain saws; sold and serviced by factory authorized dealers throughout U.S. and Canada

5-3039

McCULLOCH

World's Largest Builders of Power Chain Saws

McCULLOCH MOTORS CORPORATION • LOS ANGELES 45, CALIFORNIA
Export Dept.: 301 Clay St., San Francisco 11, Calif., U.S.A.
Canada: 220 W. First Ave., Vancouver, B.C.
525 First Ave., Quebec, Quebec
224 N. George Street, Peterboro, Ontario

NATIONWIDE SALES AND SERVICE

TREES Magazine is a bi-monthly Journal published at Olmsted Falls, Ohio, by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks (Municipal and National); and Forests (State, National and Private), in the U. S. Scanlon Publishing Co., 7621 Lewis Rd., Olmsted Falls, Ohio. Subscription by mail $2 per year; outside United States, $2.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

ALONG THE WAY With . . . EDW. SCANLON

■ HEREAFTER and HENCEFORTH, just in case you haven't noted the NEW ADDRESS of SCANLON ENTERPRISES on the MASTHEAD of this ILLUSTRIOUS SHEET, it is:— 7621 LEWIS ROAD OLMSTED FALLS, OHIO. Please CHANGE YOUR RECORDS accordingly because the Post Office is LOUSED UP ENOUGH as it is without adding to their ORGANIZED CONFUSION.

■ **Was VERY PLEASED AND HONORED some time ago to receive an AUTOGRAPHED COPY of "AMERICAN TREES—A BOOK OF DISCOVERY" from the noted author RUTHERFORD PLATT. This is another interesting book by the author of "THIS GREEN WORLD" and "OUR FLOWERING WORLD."**

■ If people would whistle more and whine less,
Hustle more and hurry less,
Work more and worry less,
Boost more and beef less,
Give more and grab less,
Business would be better d--- fast!

Arnold Burnell
Mankato, Minn.

■ **There's a VERY INTERESTING story in this month's "GARDENING ILLUSTRATED" (England) on "FASTIGIATE TREES." Three trees mentioned highly are UPRITE GOLDENRAIN, AMANAGOWA CHERRY, and CRATAEGUS MONOGYNA stricta. The author is C. E. LUCAS PHILLIPS.**

■ The AMERICAN NURSERYMEN'S CONVENTION will be held in NEW YORK at the WALDORF-ASTORIA, July 19-23. Looks like a SELL-OUT with over 600 RESERVATIONS already spoken for.

■ **And DON'T FORGET the 20th ANNIVERSARY of the founding of the WESTERN SHADE TREE CONFERENCE. It goes back to the PLACE OF ITS BIRTH, SANTA MONICA. PRESIDENT ROSS McINTIRE has a FINE PROGRAM worked up—special badges will be given to "CHARTER MEMBERS" —be seeing you "OLDTIMERS" May 13 (to 16th) (MIRAMAR HOTEL, SANTA MONICA).**

■ IT'S AMAZING BUT that NEW ENGLAND COUNTRYSIDE is CHARMING, even in March. Down there recently for the MASS. TREE WARDENS meeting at AMHERST and drove thru DEERFIELD, GREENFIELD and other pleasant towns with GEORGE TIRRELL ("MR. MISTSPRAY"). Sure gotta GET BACK THERE in the FALL—I can SEE THE COLOR NOW.

■ **THAT WATERFALL on GORDON KINGS mountain roost certainly SINGS A SWEET LULLABY — how nice it would be to have that LIQUID ROAR TO ROCK you to sleep each night—and to think of all THAT WATER RUNNING AWAY—how I COULD USE IT at RANCHO COSTA PLENTA.**

■ Got a NICE RECEPTION in NEW HAVEN. Usually the RAIN JUST STARTS, but for my visit it started with a THUNDER CRACK like an ATOM BOMB—even so with 14 MILLION GALLONS OF IRRIGATION dropping BY THE MINUTE. PETE VAN HEININGEN Parks Director, and BERT CRAN City Forester, took me on a NICE TOUR OF THE CITY TREES. A nasty ICE STORM in DECEMBER left about 75 HANGERS in EVERY ELM IN TOWN. They'll be SIX MONTHS cleaning up. They're WISHING they had a BUNCH OF "POLE-SAW" TREES.

■ **DON WYMAN purposely or accidentally ADDRESSED A LETTER to "RANCHO COSTA PLENTA, OLMSTED FALLS, OHIO" and IT ARRIVED —nuttin' like being a BIG FROG in a LITTLE POND.**

■ Old buckaroo BOB CUNNINGHAM down there in the UNITED STATES SUBURB OF TEXAS, tells a LONG ONE about a block of Live Oaks (Q. VIRGINIANA) planted on HIS STREET, and HE SAYS his was FERTILIZED and is 30% to 60% larger than ANY IN THE BLOCK. Judging from the PICTURE I'D SAY 25%, but you KNOW TEXAS!

■ **FINALLY came across that CHARLIE SWEENEY guy from STITCHBURG, MESSYCHUSETTS while attending the TREE WARDENS SHINDIG at AMHERST. Fooled their ANTI-AIRCRAFT BATTERY who were WAITING FOR ME to FLY OVER STITCHBURG by LANDING AT HARTFORD and HITCHHIKING north. BETTER LUCK next time CHARLIE.**

■ TOO BAD we can't REPRODUCE some of the GOOD CARTOONS that appear from TIME TO TIME ABOUT TREES and TREE DOCTORS. CLYDE HEARD the Des Moines NURSERY IMPRESSARIO sent us some dandies a SHORT TIME AGO. Maybe we could GET AN OKAY. Will try.

■ **These "BARK" TREES interest me IMMENSELY—Cherry bark maple; JAPENESE STRIPED BARK MAPLE; Taburuum (green); PRUNUS SERRULA (BRIGHT RED); Pinus bungeana, lacebark Pine (spotted white); PURPLE LEAF BIRCH (white trunk TURNING BLACK in the branches); of course the WHITE BIRCHES—what a SPECTACULAR SIGHT these would all MAKE IN A GROUP—how about it HENRY.**

■ The FINE STORY by HARRY BANKER, on page 9, appeared in a RECENT ISSUE of the NATIONAL BUILDERS PUBLICATION. This is EXCELLENT TREE PUBLICITY—which we have entirely TOO LITTLE OF —congrats HARRY and thanks.

■ **A GOOD CROWD of 178 attended the SOUTHERN SHADE TREE CONFERENCE at Charleston, S. C. Mar. 20. Elected president was H. O. DRENNAN —V. P.. DR. MELVIN FOWLER—Sec. Treas. H. C. SCOTT—thanks SCOTTY.**

■ Are you familiar with PRUNUS SERRULA the RED BARK CHERRY—what a BEAUTIFUL THING, the BARK IS A BLOOD RED, lustrous and clean. There's a BEAUTIFUL SPECIMEN AT ARNOLD, although personally I like a SINGLE STEMMED tree better than this LOW BRANCHING SPECIMEN. Just got a COUPLE OF BEAUTIES for the RANCHO. It should be in EVERY PARK, CEMETERY and PRIVATE COLLECTION. It will "ah" you.

■ It WOULD BE INTERESTING if we could TRACE some of the LITTLE COAST LIVE OAKS that were GIVEN AS FAVORS at the BANQUET of the FIRST WESTERN SHADE TREE CONFERENCE in 1934. There must have been SOME THAT SURVIVED. Who has one—HOW ABOUT A PICTURE?

■ The NEW Exec Secy of the AMERICAN INSTITUTE OF PARK EXECUTIVES, EMILE "BIM" MARDFIN, was a BUSY GUY at the GREAT LAKES PARK INSTITUTE at POKAGON PARK, INDIANA. He'll do alright—LOT'S OF LUCK "BIM".

■ **THE COVER PICTURE:—Thanks to Bob Vachon of McCulloch Motors (whom you Western Conference lads will meet on the tour of the McCulloch plant in L. A.) for the cover pic of the Coral Tree. (Erythrina caffra). This beautiful winter flowering species is a native of India where it forms dense thickets for lions to play around in. The tree was purchased by Bob McCulloch from the estate of the late Atwater Kent—and for beaucoup cabbage. It is about 30 years old. Seems to me there is more to the history of this tree, that is its point of origin. I know it but it just won't come out. Will run it down when I see you in Santa Monica. Thanks to Bob Vachon for the pic.**

CONTENTS

Vol. 13 Bi-Monthly No. 3

Subscription Price $2.00 Per Year
(Foreign $2.50) 35 Cents Per Copy
TREES MAGAZINE
7621 Lewis Rd., Olmsted Falls, Ohio

The Editors of TREES invite discussions, comments and all types of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

CONTENTS

Editorial ---------- 4
Beloved Character Retires
Arbor Day Comes Once A Year
To An Ancient Tree ---------- 5
by Eleanor Garst
How A Tree Grows ---------- 6
by Theodore T. Kozlowski
Temporary Grass Inhibition With Malec Hydrazide ---------- 8
by John W. Zukel
Builder Spare That Tree ---------- 9
by Harry J. Banker
The "Roller Skate" Odditree ------ 10
The Amanagowa Flowering Upright Cherry ---------- 13
20th Anniversary Western Shade Tree Conference ---------- 14
NAA News ---------- 24
by P. E. Tilford
Authors and Books ---------- 26

Observe **NATIONAL ARBOR DAY** *Last Friday in April*

March-April, 1953 **Journal of the National Arborist Association** Vol. 13—No 3

EDWARD H. SCANLON, Editor
7621 Lewis Rd., Olmsted Falls, Ohio
ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

ADVISORY COUNCIL

L. C. CHADWICK
Professor of Horticulture
Ohio State University, Columbus, O.

RALPH D. CORNELL
Landscape Architect, Los Angeles, Calif.

H. DANA BOWERS
State Landscape Engineer
Division of Highways
Sacramento, Calif.

MAUNSELL VAN RENSSELAER
Director, Saratoga Horticultural Foundation
Saratoga, Calif.

NOEL B. WYSONG
Forester, Cook County Forest Preserve, River Forest, Ill.

PAUL E. TILFORD
National Arborist Association
Wooster, Ohio

FORREST C. STRONG
Assistant Professor of Botany
Michigan State College
East Lansing, Mich.

CHARLES F. IRISH
Arborist, Cleveland, Ohio

P. P. PIRONE
New York Botanical Garden
New York, N. Y.

DONALD WYMAN
Horticulturist, Arnold Arboretum
Jamaica Plain, Mass.

CURTIS MAY
Principal Pathologist, Bureau of Plant Industry Station, United States Department of Agriculture, Beltsville, Maryland.

KARL DRESSEL
Assoc. Prof. Forestry, Michigan State College
East Lansing, Mich.

MALCOLM A. McKENZIE
Director, Shade Tree Laboratories
University of Massachusetts
Amherst, Mass.

EMANUEL FRITZ
Associate Professor of Forestry
University of California, Berkeley, Calif.

Out On A Limb

BELOVED CHARACTER RETIRES

There's going to be something missing at the National Shade Tree Conference in Chicago come next August, and it is going to be something that it is doubtful if any of us will live long enough to see replaced. For many, many years there has been a fixture at every Shade Tree Conference that we finally just took for granted. We knew that Jim Shafer with his Pratt bug poison, in many varieties and colors, was going to be there pouring out a lot of sunshine and a considerable lot of boloney. We all loved both, but Jim isn't going to be in Chicago to dispense it come August. He has finally decided to rest on his laurels and his ill-gotten gains and retire to the comparative calm of the life of a ceramic manufacturer at Clearwater, Florida. Actually he is supposed to be retired, but you know how long Jim is going to stay quiet — about two seconds.

Jim Shafer contributed a lot to the progress of the National Shade Tree Conference. And it wasn't because he was selling something. Jim sort of "growed" with the conference and he loved the many salty lads he met year after year, and formed many of his closest friendships among them. He has remarked many times that of all the conventions he has attended none have the attraction and interest of the tree conference. By the same token few salesmen, very few, hold the esteem of the rank and file of tree men as does Jim. He was always a gentleman, a regular, and his service, word and product was as good as money in the bank. We hope you won't miss the Chicago Conference, Jim, or any of the rest as long as you can toddle, and to assure this we would be honored to place your name in nomination as an Honorary Member of the National Shade Tree Conference. You deserve the best and we know your legion of tree friends from coast to coast wish you lots of luck, happiness and continued success.

ARBOR DAY COMES ONCE A YEAR

In the event that you have been a little too busy in the past few years to look up from your work and look around at what's happening, here briefly is what's happening to this great young country of ours. It's growing, and pretty fast too. Its cities and industry are growing at a terrific rate to fill the place once held by England in supplying manufactured goods to the world—and, in this day, a much wider, greater and more complex world. Its farms are shrinking and its marginal lands increasing.

This means several things. The marginal lands will, or certainly should be reconverted to forest producing areas. If not essentially for timber at least for soil, stream and wild-life preservation—and if we may wax a bit "impractical" and sentimental, as some might term it, for beauty also. This means that hundreds of millions of forest trees are needed.

With the problems in cities we have many more complexities because no sound practice of tree use has ever been worked

out in ornamental horticulture. In Forestry tree use has been evaluated on an ecological basis. Ecology is of practically no value in urban tree use, therefore some other formula must be sought by which to guide people how to avoid using the proven city failures such as Silver maple, Chinese elm, Carolina poplar and other wild area trees, and how properly to use the many many trees of character that strangely enough are so little known to a vast majority of the public, and to too many professionals.

The ideal jumping off place for such a program is to plan and execute a national Arbor Day. It isn't necessary, as we have said many times, that trees actually be planted on Arbor Day, rather, Arbor Day would serve a far more useful purpose if it were made the medium for the dissemination of sound useful tree use publicity. As a result of a program waged for the past ten years by TREES Arbor Day will be observed on the "Last Friday in April" (April 24th) in eleven states—Maine, Massachusetts, Rhode Island, Connecticut, New Jersey, Ohio, Indiana, Illinois, Wisconsin, South Dakota and Nevada. If fifteen or twenty more states could be added to this list (the date is legal in these states) then there would truly be a firm foundation upon which to do a constructive tree use job—not the hit and miss thing that has been the order of the day. Arbor Day comes but once a year but serves little purpose, and will continue to be only a day of sentiment until we and all horticultural organizations take off the blinders and wake up to our many and glaring shortcomings.

TO AN ANCIENT TREE

Mighty you stand—yet mightier far you are
Than we can see who gaze up through your boughs—
For you have nourished man and his brief life
Through centuries of change; while you change not.

We breathe the air that you have purified;
We eat the plants grown from the soil you bind;
Housed by your sacrifice, we live our lives
Cradle to grave, surrounded by your touch.

Yet—it is not for this that you are held
Dear to the hearts of all who look—and see.
Rather, it is your beauty, never matched,
From the most delicate furl of bud and bloom
To the dark massive strength of wooded peaks.

Yes, for your beauty—but for something more—
A deeper need in man than food or fire—
The need for aspiration, and for dream.

So you have stood for centuries, to man
The symbol of creation's mystery;
drawn from earth's darkest depths,
reaching, never attaining—though your utmost reach
is lost to human sight.

So men have worshipped you,
and Druids danced your rites,
and poets christened you
The Tree of Knowledge, and the Tree of Life;

Made of your budding, symbol of their hope;
Your flowering, their fulfillment;
And of your flaming autumn, glory before their death;

Of your destruction, legend; and of men
who set their strength to yours, a giant breed;

Made of your death a glory and a dream—
warming the hearth, and hypnotizing still
their eyes with upward-striving of the smoke;

And of those seeds you left to grow anew,
a dream of life's renewal, and the spring.

So proudly may you stand when we are gone;
Symbol of seasons, postulate for man
His brief and temporal flowering on this earth.

—Eleanor Garst
1318 W. Maxwell
Spokane, Washington

Thanks to C. C. Pangborn of Spokane, Wash., for sending this fine tree poem.

The Quaking Aspen

Trees have voices. The soft whispering rustle of a Quaking Aspen is much different from the sound of a cottonwood or any other tree. They have personalities too, and the leaves of each kind move in a distinctive manner. The quaking aspen is America's liveliest tree. In the slightest breeze, its small round leaves tremble almost incessantly, like thousands of butterfly wings, fluttering and twinkling all over it. You will find out why if you watch the pixy dance of just one leaf: the stem, from one and one-half to three inches long, is flat, flabby, and turned at right angles with the blade of the leaf.

Quaking aspen, also called Smalltooth or Trembling Aspen, and "popple" by lumbermen, has two other distinctions: it grows on a greater variety of sites than any other species of tree in North America and has by far the most widespread range. The Bigtooth Aspen, also called "popple," is commonly found with it but occurs only in the northeastern quarter of the United States and in adjacent Canada. Quaking aspen thrives on sandy soil, in wet ground and tamarack swamps, in high dry places, and from sea level to elevations above 10,000 feet. It is common in northern Illinois, all of our Great Lakes and Northeastern states, and most of Canada. It also extends from Labrador and the shores of Hudson Bay to the Yukon valley in Alaska; south thru the Rockies and Sierras into Lower California, Mexico and New Mexico; south along the Appalachians into Kentucky; and is scattered thru the northern Great Plains states.

In the cut-over and burned-over forest lands of such states as Michigan, Wisconsin and Minnesota, this tree and the largetooth aspen makes up the principal forest cover on millions of acres. They protect and improve the soil. They provide shade for the maple, pine, balsam and other species that gradually replace them because aspen does not like shade. It is a tree of sunlit openings. Popple thickets furnish excellent cover and food for game.

By Roberts Mann

PLANT AMERICA—WISELY

HOW A TREE GROWS

THEODORE T. KOZLOWSKI
Head, Department of Botany
University of Massachusetts,
Amherst, Mass.

A famous scientist once said that if each of the vital processes which are carried on by a tree could be represented by a sound of a certain pitch and volume, man would recognize the tree as a symphony. Plant scientists know that growth of trees involves many complex biochemical processes which are occurring simultaneously in trees and are very precisely coordinated. The rates of the individual processes may be different from minute to minute and from day to day. As a result of fluctuations in the rates of these processes, trees grow rapidly in their youth and slowly as they get old. In any one year growth is most rapid in the very early part of the frost free season and by midsummer may be slowed up considerably.

The three main parts of a tree; roots, stems and leaves, each have important functions to perform. The leaves are primarily important in manufacturing carbohydrates and in giving off water vapor to the atmosphere. The roots are important for anchorage, absorption of water and minerals from the soil, and for storage of reserve foods. The stem serves to support the crown, to conduct water and mineral substances upward from the roots, and to conduct foods from points where manufactured to points where they are needed in growth or where they are to be stored for future use.

To a plant anatomist, the stem of a tree might be viewed as consisting of annual increments of wood added one on top of another like a series of megaphones. These growth increments in the form of hollow cones are firmly joined to the preceding and succeeding structures which are similar. (Fig. 1)

Actually the mechanisms providing for growth in height and growth in thickness of trees are quite different. Elongation of the branched cylindrical axis of a tree is traceable to a terminal growing point or apical meristem. This kind of growth, called primary growth, occurs at all stem, branch and root tips as a result of divisions of cells in those regions and provides for increase in height and length. It also provides for development of the branching system of stem and roots and for lateral appendages, such as leaves and root hairs.

Primary growth cannot adequately provide for stem thickening. Growth in thickness of trees is traceable to a cambium between the bark and wood. This is a layer of meristematic or dividing tissue which each year gives rise to additional wood cells and bark cells. Layers of new xylem (wood) and of new phloem (inner bark) are inserted between older layers of the same kind, and the stem increases in girth. (Fig. 2) The layers of xylem cells are lignified (woody), and such cells retain their shape. Phloem, which is formed outside the cambium, is quite different. This tissue is pushed to the outside as new tissue forms under it and eventually is cast off as bark. Bark is never as thick as wood on a tree for several reasons: The layer of xylem (wood) formed a given year is usually many times as thick as the corresponding layer of phloem. Phloem contains a type of cell known as a sieve tube and may also contain companion cells, parenchyma cells, or bast fibers. Walls of sieve tubes and companion cells are not woody and function in the tree for one year only. They usually collapse during the second year. Because of bark pressure, the older phloem tissue is compressed so that it does not occupy as much space as formerly. Finally, old phloem tissues are shed. Bark actually consists of an outer dead portion and an inner living portion. Fragments of dead bark are shed routinely.

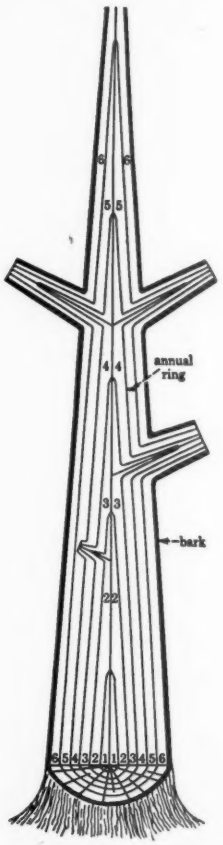


Fig. 1. Diagram showing cross and longitudinal sections of a six year old tree. The numbers indicate the year of formation of the section in which each number is located. (Reprinted with permission from Robbins and Weier Botany 1950, John Wiley and Sons, Inc.)

Each year growth in thickness is usually most rapid during the vernal flush of growth at the beginning of the season. As the growing season advances there is a marked slowing down of growth. That section of the annual growth ring which is formed during the spring flush of growth is quite porous and of low density. Such tissue is called early or spring wood. The part of the annual ring which is produced later in the growing season, called late or summer wood, is darker and composed of denser cells. It provides strength but is not as useful for conduction of sap as is the spring wood. A cross section of a tree stem will show a series of concentric annual rings. (Fig. 3) These rings are prominent because of the differences in density of

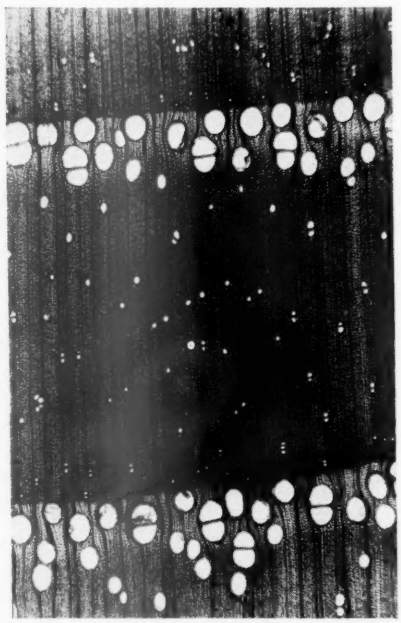


Fig. 2. Photomicrograph of a cross section of a piece of wood of white ash (Fraxinus americana L.) showing width of one whole annual ring and portions of two other annual rings. The large wood cells found in the spring growth are vessels. Much smaller vessels are evident in the summer wood. The mass of cells surrounding the vessels are chiefly wood fibers. The dark, vertical streaks are wood rays (or vascular) rays. (Photograph by T. T. Kozlowski).

spring growth of one year as against the summer growth of the previous year which adjoins it. The amount of woody tissue produced varies in width and density in different trees and even at different heights of the same tree.

When a tree is young the wood that has accumulated annually is an avenue for conduction of sap. It also provides strengthening for the stem and, to some extent, serves as a storage reservoir of food. Some of the cells in this sapwood (averaging about 10% but varying from perhaps 5% to 40%) are alive and connected with living cells in the bark. As a tree gets older all the living cells of the central core die and turn darker. This central cylinder of dead tissue or heartwood provides mechanical support and is no longer involved in physiological processes. Heartwood has in it deposits of such substances as oils, gums, resins, and tannins which account for the dark color. Heartwood and sapwood are different in color, infiltration, content, weight, and sometimes in strength. Some of the products deposited in heartwood are toxic or repulsive to fungi and insects. Once heartwood begins to form it continues to increase in amount throughout the life of the tree, conversely sapwood is relatively widest in the young tree and becomes relatively narrower as the tree grows older. Throughout the wood and inner bark and radiating like spokes of a wheel are the wood rays. They run at right angles to growth increments and serve as avenues of lateral conduction and as storage reservoirs for food.

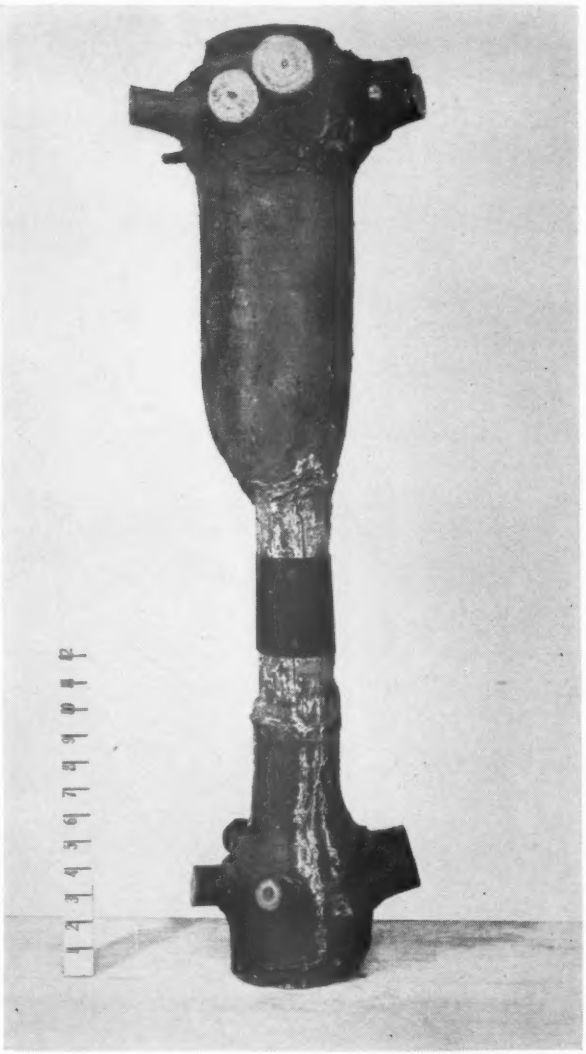


Fig. 4. Portion of white pine stem that had been girdled by porcupines. This area of feeding was located between two whorls of branches and all tissues external to the xylem were removed. Note the poor development of the stem above the lower whorl of branches and the much better development (as evidenced by greater thickness) below the lower whorl of branches. Carbohydrates produced by leaves at the tips of the branch were translocated downward and stimulated growth in thickness below the whorl while the portion of the stem above the whorl was not getting an adequate amount of carbohydrate. (Photograph by R. L. Coffin).

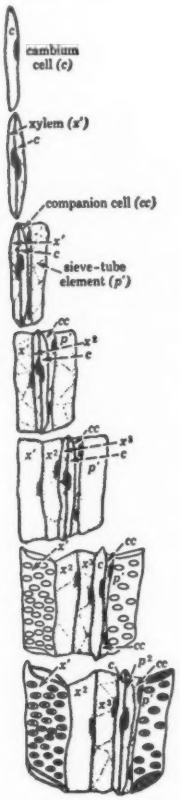


Fig. 3. Diagram showing production of xylem (wood) and phloem (inner bark) by successive divisions of a cambium cell. c, cambium; cc, companion cell; p^1, p^2, phloem; x^1, x^2, x^3, xylem. (Reprinted with permission from Robbins and Weier Botany 1950, John Wiley and Sons, Inc.)

Physiology of Tree Growth

Growth in its simplest form represents addition of tissues to the roots, stem and leaves through cell division and production of new protoplasm. A tree is simultaneously carrying on several dynamic processes which require mention for understanding of tree growth.

Metabolism is generally defined as the sum of the processes involved in the building up and tearing down of protoplasm. It can be divided into anabolic phases and catabolic phases. Anabolic phases include such processes as photosynthesis, fat synthesis and protein synthesis as well as the assimilation of plant foods into new protoplasm. Foods are generally best considered to be organic substances used either directly or as a source of energy, or for the building of tissues and protoplasm. The three categories of foods are carbohydrates (primarly sugars), fats and proteins. Catabolic phases of metabolism include such processes as respiration, fermentation and digestion. Although in any discussion these phases are separately considered, it should be kept in mind that they are going on at the same time in the tree.

Photosynthesis is the process in which simple carbohydrates are synthesized from carbon dioxide and water by green leaves with energy supplied from the sun and with oxygen produced as a by-product. Chemically the process may be summarized thus:

(Continued on Page 22)

Trees...

Temporary Grass Inhibition With Maleic Hydrazide

By JOHN W. ZUKEL
Naugatuck Chemical Division
U. S. Rubber Co.
Bethany, Connecticut

The unique plant growth inhibiting properties of maleic hydrazide (MH) were discovered in our laboratory in the fall of 1948. Since the degree of inhibition produced by MH is proportional to the dosage applied, experiments were undertaken in cooperation with the Connecticut State Highway Department to determine if mowing might be reduced. A total of 300 acres of plots have been evaluated using various types of equipment, dosages, times of treatment and retreatment since the summer of 1950. Continued experimental results indicate that frequency of mowing can be substantially reduced by proper application of MH.

Equipment found most satisfactory on highway areas was found to be a hydraulic sprayer operated at 200 pounds pressure delivering 40 gallons of solution per acre through a nozzle 1/ giving a fan spray ten feet wide. (Figure 1.) Use of low pressure, low volume equipment delivering 40 gallons of liquid per acre through a boom equipped with ten nozzles was likewise found to be satisfactory.

The results of experiments during the past three years indicate that the best time of treatment to secure the maximum degree of inhibition at minimum dosages were either a spray applied to green grass (when about 3 inches tall) at the start of growth in April or May depending on the season, or a fall spray made to green grass before dormancy, or in October in Connecticut.

Summer sprays likewise inhibit grass but the length of inhibition is less during this period than from equivalent dosages applied either during the spring or the fall.

MH is absorbed by green grass over a period of about 24 hours and then translocated downward for about one week to ten days. Any rain occuring within the 24 hour period after spraying may reduce the effectiveness of the chemical in proportion to the amount of precipitation, but once MH is absorbed by the plant there is no loss from rainfall.

Spraying of grass before mowing during the summer is preferred in order to allow a larger absorption surface, and one week should be allowed for downward translocation before the area is mowed.

Fig. 1. Applying MH at 15 miles per hour.

Fig. 2. MH sprayed in October and May. Photo in July. Check on left.

Use of 40 or more gallons of liquid per acre is required to uniformly distribute the MH. Lower volumes per acre were less effective but quantities of 200 gallons per acre gave satisfactory results.

1/ Off center spray nozzle, Spraying Systems Company, Bellwood, Ill.

(Continued on Page 20)

PLANT AMERICA—WISELY

BUILDER, SPARE THAT TREE!

Editor's Note: This story appeared in the publication of the National Builders Association.

By Harry J. Banker

Arborists Association of N. J.
West Orange, N. J.

In recent years, more trees have been destroyed in building operations than by many of our more serious tree diseases.

Much can be done to save the more desirable trees in the development of woodland tracts for home sites or erection of garden apartments, through the use of definite precautionary measures. Such measures can only be outlined in detail by a qualified arborist who should be consulted while the project is in the planning stage, or at least before actual excavation operations get under way. In this way, both he and the builder can determine what trees should and could be saved.

Such consultations are essential for many reasons. Protective measures must be put into effect to avoid serious bark injuries to the trunk and roots by the careless use of dozers, cranes, trucks. Proposed changes in existing grade levels and the proximity of trees to the proposed buildings, streets, curbs, sewer and water lines, should all be carefully considered before proceeding with the building operations. Not only does such foresight prove more economical in the long run, but overwhelmingly more successful in saving the trees. Removing dead trees after buildings, streets, etc., have been constructed is always more hazardous and therefore more expensive. When this problem is left for new home owners to solve, considerable dissatisfaction and adverse publicity arises.

Grade level changes are perhaps one of the greatest difficulties trees must contend with. Roots must have air and moisture in proper proportions if the tree is to live.

One of the important facts to remember where filling-in operations must take place around trees is the species of tree involved. Some species will not tolerate even a few inches of fill; while others will survive with even two or three feet of fill placed over their root system, providing the proper corrective measures are taken. Among those that react unfavorably to filling-in are Dogwood, Tulip, Beech, and most conifers—in a word, those trees that root near the surface. Most Oaks and Maples are more tolerant to grade level changes, providing adequate steps are taken to assure good root aeration and moisture requirements.

When the fill does not exceed eight to ten inches, the use of small stone, gravel and coarse sand as a filler around the trees is advisable to permit the proper aeration of the root system, as well as moisture penetration and drainage. However, where the grade is to be raised twelve inches or more, the use of a dry well with a connecting series of four-inch clay drain or tile pipes is advisable. The installation of dry wells alone, especially around the larger trees, very often proves unsuccessful, as the root area which is aerated by this well is only a fraction of the amount needed. Also, nothing has been done to provide for adequate drainage. The installation of dry wells alone has met with a fair amount of success when used around the smaller trees (those with 6″ d.b.h. or less).

Developers of garden apartment projects on old estates will find the installation of dry wells with connecting aeration tile pipes extremely valuable in preserving the more important and specimen trees on the grounds. There is no guarantee, however, that this procedure will always save the tree in question. For this reason and because of the high cost involved, we do not recommend the installation of this tile pipe aeration system except for vitally important and specimen trees.

In an effort to find a less expensive method to save other large but not always important trees, the writer successfully adopted a compromise method for providing adequate drainage and root aeration of filled-in trees, that is considerably more economical and less complicated to use. In the fall of 1946, it became necessary to install fill of over three feet about the base of a large Pin Oak (Quercus Palustris) at the rear of my residence. Fortunately, a road digging project close by provided me with a considerable amount of fairly large size pieces of traprock (12 to 18 inches in diameter) which was dumped over the entire area (25′ x 50′) about the tree. This underfill or traprock was built up to within 18 inches of the final grade. The remaining 18 inches was made up of sub and top soil. A series of 4″ clay drain pipes was then installed perpendicularly in 8 equally spaced locations in a clockwise formation around the tree, about 12 feet from the trunk. This procedure eliminated the use of the horizontal lengths of pipe. Also the irregular position of the varied sized pieces of traprock permitted the penetration of air down as well as the escape of detrimental gases through the irregular spaces formed by these rocks. Excellent drainage is also afforded the tree with this type of traprock filling.

Another destructive procedure somewhat comparable to drastic filling-in operations around trees is the practice of cutting down the natural grade level. Not only is the water table lowered but often severe root injury takes place. Sometimes this grading down is limited to the scraping off of the top four or five inches of soil in order to salvage the topsoil. In other instances, this lowering of the grade involves the removal of two or three feet of soil. Attempts by the developer to retain some of the more desirable trees by leaving them either singly or in groups perched up on a small mound or island of soil 8 to 10 feet in diameter should be avoided. If, however, these mounds or islands are increased in diameter to include an area a few feet beyond the spread of the branches and the grading down is limited to a gradual sloping away from the tree, it will more than likely survive. Extreme care must be exercised in such procedures to limit the amount of root disturbance or injury that takes place.

The fertilization of trees is extremely important wherever grade changes have been made or serious root and bark injuries have taken place. The thorough application of the proper type of tree food aids in building up the vitality lost in the various operations that disturb the root systems. It also aids in promoting a faster heal of the callous tissue over the scars left by the bulldozers and other types of mechanical equipment, as well as encouraging the more rapid growth of new roots to compensate the tree for those killed or damaged.

Protection of trees to be retained, from certain mechanical injuries in any project, no matter how large or small, can be easily accomplished by the erection of simple guards built of scrap or used lumber. This simple precautionary measure not only costs considerably less than later repair jobs, but definitely assures a minimum of mutilation to either trunks or roots.

Where such protective guards are not provided, and the trees do sustain bark and root injuries, they should be treated surgically at the earliest opportunity. The surgical shaping of either bark wounds or the mutilated roots must not be attempted by an amateur. This work must be done by a thoroughly trained and experienced arborist. Bark wounds shaped properly and treated with

(Continued on Page 18)

Trees...

The "Roller Skate" Odditree

Several weeks ago we received an interesting letter and pictures from Joe Dietrich, Supt. of Parks and Trees at Greenwich, Conn. Joe had run across a very unusual treatment of a tree on the grounds of the Cheney Woolen Mill at Manchester, Conn. This grand old White Oak (Quercus alba), which has been dubbed the "roller skate" tree, has been a favored tree in the Cheney family for many years. Upon receipt of the fine pictures from Joe a number of questions immediately arose concerning this novel method of preserving the beautiful feature of these ground sweeping limbs. Joe contacted Mr. Frank D. Cheney for the answers, and the following letter from Mr. Cheney tells the story:

Dear Mr. Dietrich:

Please excuse my delay in replying to your letter in regard to our oak tree which has roller skates on its limbs, but I was away a good deal last week because of the death of a very dear cousin, and had no opportunity to answer it. The following is the best information I have been able to get:

(1) This tree is a White Oak.

(2) Before the death of my mother, Mrs. Frank W. Cheney, in 1918, she had planks laid on the ground so that the elbows of those long branches, which you have seen, could move back and forth on the planks during high winds without so much damage to the bark and without digging holes in the ground.

(3) Many years later, about 1930, my brother, Austin Cheney, installed the rollers which you saw on these branches, which at that time continued to travel back and forth on planks.

(4) These planks were about 12" wide, 2" thick, 5 feet in length, and were placed at right angles to the branches. The center of the plank coming under the normal position of the branch.

(5) Later, instead of planks, slabs of slate were installed because the planks rotted out quite rapidly.

(6) So far as I can find out the rollers have not been changed from that time. This should be done, but it would be a major operation and a very expensive one as the girth of the branches has increased so that it completely fills the metal cradle which held the rollers to the branches.

(7) No important change, other than the one mentioned in (6) above, is necessary to compensate for the growth of the tree except, at rare intervals, to move the slabs of slate toward the outer ends of the branches in order to keep the rollers on the slate slabs.

Very truly yours,
Frank D. Cheney,
Chairman of the Board.

Top photo shows "Rollerskate" Oak on its slate roller rink. In bottom picture a full view emphasizing the value of the low sweeping branches.

20th Anniversary
Western Shade Tree Conference
May 13 - 16
Santa Monica, Calif.

Here's A Saw that Isn't Afraid of A Long Day's Work...

HOMELITE

THE SAW THAT GIVES YOU MORE PRODUCTION AND LESS DOWN TIME

Put it to a good, long, rugged test. Compare it with any other one man chain saw. You'll find that a Homelite not only starts quicker, cuts faster, handles easier, but also *of great importance,* it stands up longer without trouble or fussy repairs.

On actual tests by large logging companies . . . in the woods . . . Homelite saws have required less down time for repairs over a long period of time than any other saw.

A Homelite is that kind of saw. It's a real "pro". Its rugged, precision built, 4 horsepower engine is the result of Homelite's vast experience in designing and manufacturing high-powered, lightweight, gasoline engine driven units for nearly two generations.

Write for a free demonstration today.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE • DEPENDABILITY • SERVICE

HOMELITE CORPORATION
803 RIVERDALE AVENUE • PORT CHESTER, N. Y.

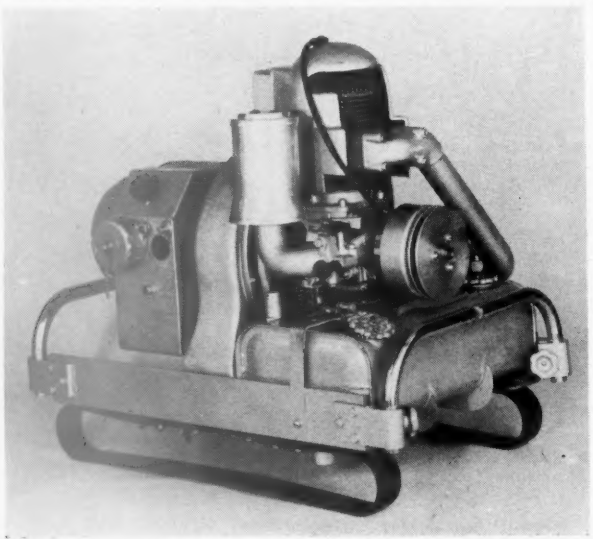
New, Light-Weight, Low-Cost Tree Mover

Ease of operation, greatly reduced weight and quick demounting are features of the new tree mover just perfected by Williams & Harvey Nurseries of Kansas City, Missouri.

A combination of practical features from previous models has been incorporated into this new tree mover. Both flexible and sturdy, but with greatly reduced weight, this new mover is less costly to manufacturers and can be sold at a substantial saving over previous models. It can be demounted from the truck bed in ten minutes, a much appreciated feature.

Two sizes are available: a five foot mover that will fit on a ¾ or 1-ton flat bed truck and handle 6-inch trees with a five-foot ball; and a six-foot model for 1 or 1½-ton flat bed truck and move 8-inch trees with a six-foot ball.

Williams & Harvey Nurseries has been doing general retail landscape work for over twenty-five years, specializing in selling and moving large trees. To meet their needs in this work, they have developed several different types of tree movers. Because of a number of special features in those movers, that made tree moving easier and more successful, other nurseries wanted such equipment and as a result, Williams & Harvey have, for many years, manufactured tree movers and sold them in all parts of this country. They anticipate lively interest in this newest mover, with its greater economy and adaptability.



Homelites new Dual-Voltage 5 Kilowatt Generator. Model 32A-115/230-1.

NOW

SEYMOUR SMITH presents

PRUNING SAWS

that CUT FASTER LAST LONGER

No. 922

No. 622

No. 514

Specially designed for arborists and other professional users. A complete line of 7 patterns covering all requirements up to chain saw work.

Blades — made by Sandvik of famous Swedish charcoal steel — have fast-cutting, large, deep teeth with heavy set to prevent binding. Handles are of laminated hardwood, streamlined and free from horns and projections.

also LOPPING SHEARS

5 patterns in various sizes, including the new Seymour Smith TIFFANY PRUNER.

TREE PRUNERS

No. 11 Pruner Head

No. 11 "Telephone" tree pruner head, with 1" capacity and No. 12 with 1½" capacity are the finest available. Also rugged poles of selected spruce with seamless aluminum joints.

POLE SAWS

No. 20 Saw Head

No. 20 saw head has 16" needle point teeth, is adjustable to 3 positions. Uses standard poles.

PRUNING SHEARS

No. 90 Professional Double-Cut

For generations Seymour Smith has been supplier of the finest hand pruners for professional use. Made in 8 models for all requirements.

Most dealers carry Seymour Smith pruning equipment. Write us for descriptive literature.

SEYMOUR SMITH
OUR 103rd YEAR
The Tool of Quality

SEYMOUR SMITH & SON, INC.
32204 Main St., Oakville, Conn.

Soon this unique Upright Flowering Cherry will be in bloom. It is the "Amanagowa" variety and is Beautiful Spring and Fall.

CONTROL INSECTS WITH PRATT'S SPRAYS

Pratt's Sprays are formulated for use in mist or hydraulic sprayers to give the greatest degree of safety and effectiveness in the dormant spraying of shade trees and evergreens.

SCALECIDE—The oldest and best known dormant oil spray. Contains 96% highly refined, highly paraffinic, dewaxed oil. For greater safety and effectiveness in the control of scale and other over-wintering insects on shade trees, evergreens and ornamentals.

PRATT'S SUMMER SPRA-OIL—A miscible 97% white oil type summer oil. For use as a dormant oil spray on ornamentals, evergreens and conifers where a lighter oil is desired.

PRATT'S SHADE TREE OIL—A 96% superior type oil for shade tree spraying.

PRATT'S E-25% DDT—An emulsifiable DDT for use in water——DDT sprays.

PRATT'S S-30% DDT—A DDT solution in a solvent for use in oil——DDT sprays.

Order Pratt's Sprays From Your Distributor
Bulletins Available—Pratt's Oil Sprays—Pratt's Sprays for Mist Blowers and Hydraulic Spraying

B. G. PRATT CO. Insecticides Hackensack, N. J.

BARTLETT

WE Combination Pruner and Saw

Is now available for immediate shipment. Simply write for our attractive folder describing this Combination in detail and we will reply by return mail.

Tree Paint

Made with pure Egyptian black asphalt base. Easily applied with ordinary brush. Ingredients helpful for healing tree wounds. Will not freeze, crack or blister. (Packed in convenient containers of 6—1 gal. or 24—1 qt. cans.)

Bartlett Tree Surgery Supplies are well known wherever trees are grown.

Ask for Catalog No. 33

Bartlett Mfg. Co.

3028 E. Grand Blvd.
Detroit 2, Mich.

20th Anniversary Western Shade T

Conference Theme—"Let's Plant a Tree"

Twenty years ago the Western Shade Tree Conference was born in Santa Monica, California. On May 13th the Conference will observe its 20th Anniversary by paying its first return visit to the Bay city. Over 100 attended the inaugural meeting but over 300 are expected to be on hand when President Ross McIntire starts the festivities.

It is expected that many of those who eagerly attended the first meeting on April 26, 1934 will return for the Anniversary. It is planned to honor these people with "Charter Member" badges.

Over the years many notable leaders in arboriculture, park management, landscape architecture and the nursery field have served as president of the Conference. Commencing in 1934 when Gilbert L. Skutt, then Superintendent of Parks at Pasadena and recently retired as Superintendent of Los Angeles Parks, served as first president, there followed; Ralph D. Cornell; George K. Freeman; the late Fred N. Evans; Edgar M. Sanborn; Fred Roewekamp; Ray Hartman; C. F. Holdernes; Pierre Pierre Miller (2 terms); Dale Griggs; Glenn Garwood; Willis Wagener; Horace Bosworth; C. E. Lee; Riley Stevens; Walter J. Barrows, and now Ross McIntire.

The Western Shade Tree Conference became a chapter, the Western, of the National Shade Tree Conference in 1942, a step that marked the first real effort toward the unification of arboricultural interests nation-wide.

Elaborate plans are being made by President McIntire for this Anniversary meeting. An effort is being made to include on the program those who appeared on the first program. A history of the Conference will be given by Ed Scanlon who founded the organization while serving as City Forester at Santa Monica in 1934. Also on the program is H. Dana Bowers, Landscape Engineer of the California Division of Highways; Ralph D. Cornell, Landscape Architect; Gilbert L. Skutt, retired, Supt. of Parks, Los Angeles, and Dr. Willis W. Wagener, Pathologist, U.S.D.A. This milestone in the journey toward "A New Era in Tree Culture for the West" should be the biggest and best in this splendid series of productive meetings. The program follows:

Ross McIntire, President Western Chapter 1953.

Twentieth Anniversary
Shade Tree Conference
Santa Monica, California

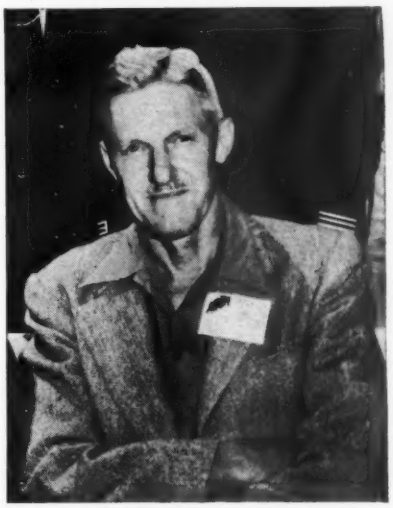
e Tree Conference In Santa Monica

How many of these west coast tree people can you pick out. The photo was taken at the First Western Shade Tree Conference in Santa Monica 20 years ago. Dr. D. T. MacDougall is the distinguished gentleman about to plant the ceremonial tree. (The tree was later planted at 24th and Washington Sts. in Santa Monica).

May 13, 14, 15, 16, 1953
Conference Headquarters
Miramar Hotel

Wednesday, May 13

A. M. —Miramar Hotel, Santa Monica
"SELECTING A TREE"
9:00—REGISTRATION — Lobby, Miramar Hotel
Session Chairman
10:00—OFFICIAL OPENING —20th ANNUAL CONVENTION — President Ross O. McIntire
Announcements and Appointment of Committees
10:10—RELATION OF SOIL TO TREE SELECTION*
Kenneth Smoyer — L. A. County Farm Advisor*
10:20—INFLUENCE OF SOIL & WATER ON TREE GROWTH
Prof. M. R. Huberty - Prof. of Irrigation, U.C.L.A.
10:40—OPEN DISCUSSION
Symposium:
11:00—TREE SELECTIONS FOR HOMES, PARKS AND PARKWAYS
Chairman—Ralph Cornell, Landscape Architect, L. A. (Pres. 1934-35)
Dr. Mildred Mathias, Asst. Specialist, Dept. of Botany, U.C.L.A.
J. Gooch—Landscape Architect
Allen Reid — Landscape Engineer, Palo Alto
12:00—FOUNDERS' DAY LUNCHEON — Miramar Hotel
Master of Ceremonies — Finlay MacKenzie Supt. of Parks, Santa Barbara (Pres. 1948)



Ralph D. Cornell, Past President Western Chapter.

—ADDRESS OF WELCOME — Pres. Santa Monica Chamber of Com-

(Continued on Page 16)

What Beats Me Is OREGON Chipper® CHAIN

Strongly Guaranteed. Patented.

Look for the name "OREGON" on the cutters.

For cutting trees down...and up...nothing beats genuine hard-chromed OREGON Chipper Chain. The standard replacement chain for any make of saw, it has no match for efficiency, durability, easy filing and maintenance. Put an OREGON Chipper Chain on your saw.

Copyright 1953 by Oregon Saw Chain Corp.

SEE YOUR DEALER OR WRITE FACTORY FOR DETAILS

OREGON Saw Chain Corp.
SAW CHAIN SPECIALISTS
8816 S. E. 17th Ave., Portland 2, Ore.

IN PORTER'S *NEW* TREE TRIMMER ARE THE FEATURES YOU SPECIFIED

We asked the men who use tree trimmers what feature they'd specify for the perfect trimmer. Then we listened — learned — and put their practical suggestions into our new tree trimmers. Check the 6 big features.

6 Big Features

- ✓ All-steel heat-treated head.
- ✓ Special double steel hook practically eliminates bending, breaking, and twisting even when abused.
- ✓ Heat-treated alloy steel blade cuts easily — holds cutting edge.
- ✓ Pivot bolt stays tight and reduces friction.
- ✓ Spring located so it can't catch or interfere when cutting.
- ✓ Available with solid 8', 10' or 12' poles or jointed poles.

See your supplier for complete line of Porter Pruners or write for catalog.

YOU NEED PORTER'S ONE-HAND PRUNERS, TOO

No better one-hand pruners are made than Porter's DuraCut and DuraShear for work on shrubs, bushes, vines, etc. Equipped with Plastisol cushion Grips that won't slip nor blister hands. Positive thumb lock prevents pinching. Cutting blades of heat-treated alloy steel.

DURACUT (Anvil Type) for fast, easy cutting. $2.75

DURASHEAR (Shear Type) for close, clean cuts. $3.50

$3.95 List price of head

H. K. PORTER, INC.
Somerville 43, Mass.

merce (?)
—RESPONSE — Gilbert L. Skutt, First President, 1934
—HISTORY OF WESTERN SHADE TREE CONFERENCE
Ed Scanlon, Founder, Western Chapter; Editor, "Trees" Magazine
—INTRODUCTION OF PAST PRESIDENTS
—INTRODUCTION OF COMMERCIAL EXHIBITORS

P. M. —Miles Playhouse, Lincoln Park — Site of Original Meeting

"CARE OF A TREE"
—Session Chairman

1:30-2:00—CONTINUED REGISTRATION & INSPECTION OF EXHIBITS

2:00—TRAINING YOUNG TREES
W. H. Chandler, Dean of Agriculture, Emeritus, U.C.L.A.

2:30—INJURIOUS SHADE TREE INSECTS
Dr. Leland Brown, Asst. Entomologist, U.C.L.A.

3:30—NEW TREE DISEASES OF THE WEST COAST
Willis Wagener, Sr. Pathologist, U.S.D.A.*

6:00-7:30—DINNER HOUR—Committee Meetings, Etc.

"WHAT'S WRONG WITH MY TREE"

EVENING

7:30—TREE CLINIC — Answers to your Questions in Tree Care
Moderator — Prof. P. A. Miller, Plant Pathologist, U.C.L.A. (Pres. 43-44)

Thursday, May 14

A. M. —Miles Playhouse, Lincoln Park
Session Chairman — Ross C. McIntire, President, Western Chapter

9:00—ANNOUNCEMENTS

9:15—NEW CHEMICALS AND THEIR USE
Charles Allen, District Manager, California Spray-Chemical Corporation

9:45—Panel discussion on chemicals—members to be named.

10:30—REPORT OF NOMINATING COMMITTEE — ELECTION OF OFFICERS

11:00—BUSSES LEAVE FOR McCULLOCH SAW PLANT VIA BRENTWOOD AND BEVER-

(Continued on Page 18)

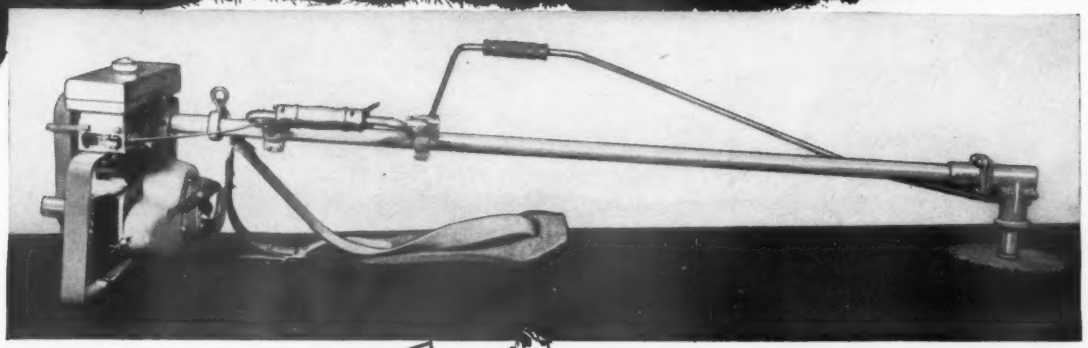
BRUSHMASTER®

CUTS COSTS!

BRUSHCUTTING MACHINE HAILED BY INDUSTRY!

"According to my calculations, the two BRUSHMASTERS would pay for themselves in twenty-nine (29) working days."

SOUTHERN CANADA POWER CO.



BRUSHMASTER

DIRECT FACTORY DEALERSHIPS AVAILABLE!

- Choice territories now open
- Complete, free promotion plan
- Free inquiry referral plan.

Unusual opportunity! Sales of this revolutionary brush cutter practically assured by the complete sales promotion plan!

WRITE TODAY on your own letterhead for complete details of procuring a valuable Brushmaster Factory Dealership!

ONE MAN WITH BRUSHMASTER CLEARS BRUSH Cheaper, Faster Than 6 Hand Cutters

- **Lightweight (35 lbs.) . . . easily operated!**
- **Designed by arboriculture and forestry experts!**
- **Clears all undergrowth . . . even saplings to 4″ diameter!**
- **Dependable, rugged . . . free from vibration!**

This amazing new commercial brushcutting machine is the ONE LOGICAL METHOD of maintaining right-of-way clearance! Brambles, vines, bush, brush, briars . . . all undergrowth is quickly, easily, safely cleared by Brushmaster . . . and AT LESS COST! Exhaustively field tested under grueling conditions, Brushmaster is now hailed by hundreds of enthusiastic users!

Manufactured and sold in Canada by
H. & R. Arms Co., Ltd., Drummondville, Quebec

BRUSHMASTER SAW, INC.

Subsidiary of HARRINGTON & RICHARDSON ARMS CO.
ESTABLISHED 1871
WRITE TO: 290A WEST ST., KEENE, N. H.

Western Conference

(Continued from Page 16)

LY HILLS
12:30—BUSSES ARRIVE AT McCULLOCH PLANT —6101 West Century Boulevard (Across from International Airport)
1:00—LUNCHEON, McCULLOCH EMPLOYEES' RECREATION BUILDING
"HOW CHAIN SAWS ARE MADE"

P. M. —
2:00—TOUR OF McCULLOCH PLANT
3:30—MOTION PICTURE—McCULLOCH EMPLOYEES' RECREATION BUILDING
4:30—BUSSES RETURN TO MIRAMAR HOTEL
6:00—COCKTAILS AND DINNER HOUR

EVENING
8:00—MEETING CALIFORNIA SOCIETY, AMERICAN INSTITUTE OF PARK EXECUTIVES

Friday, May 15

"TREE USES—PERSONNEL AND EQUIPMENT"
—Session Chairman

A. M.—Miles Playhouse, Lincoln Park
9:00—REPORT ON STREET TREE LIST COMMITTEE
George Hood, Chairman, Horticulturist, City of Palo Alto
9:30—USES OF TREES IN LANDSCAPING CALIFORNIA FREEWAYS*
Dana Bowers, Landscape Architect, California Division of Highways
10:00—Public utility line clearing —a specialized field, its requirements and needs—Shirley Rowland, Rowland Trees.
10:30—TRAINING QUALIFIED MEN IN THE CARE OF TREES
California Polytechnic College—San Dimas
11:15—REPORT ON STANDARDS AND CERTIFICATION OF TREE WORKERS
11:30—WHAT MODERN EQUIPMENT MEANS TO THE ARBORIST
Roger Sohner, Sohner Tree Service*
12:00—BARBECUE LUNCH—Lincoln Park
P. M.—FIELD DAY, Lincoln Park
2:00—DEMONSTRATION OF SAFETY FOR TREE WORKERS AND USE OF POWER TOOLS
Southern California Edison Company
2:30-4:00 — DEMONSTRATIONS OF EQUIPMENT BY COMMERCIAL EXHIBITORS
—THROW LINE CONTEST—OPEN TO ALL

EVENING
7:30—ANNUAL BANQUET
Entertainment and Installation of Officers

Saturday, May 16

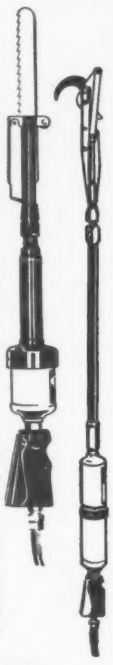
A. M.—Miles Theatre, Lincoln Park
9:30—BUSINESS MEETING
12:00—ADJOURNMENT

you can rely on

MILLER-ROBINSON

Limb Loppers and Tree Saws To CUT Tree Trimming Costs **30-50%!**

That's right! Thousands of installations have indicated time savings of up to 50%!



And... you don't have to worry about Miller-Robinson air-powered equipment breaking down. It will stay in operation year after year... cut clean and fast... do the job better. The reason? It's manufactured by pioneers in the field... each item proved by years of service.

Models available for every need, including insulated models for protection against accidental electric shock. Compressor units, fittings, hoses, accessories. Suggestions on compressor jeep, platform, or tractor mounting available.

Miller-Robinson equipment may be obtained throughout the United States from machinery dealers or supply houses, or direct from the factory where local outlets are not convenient. Every effort will be made to have a qualified representative call upon you with equipment and make a field demonstration on your work.

MILLER-ROBINSON CO.
7007 Avalon Boulevard
Los Angeles 3, California

☐ Please send me complete information on your air-powered limb loppers and tree saws.

Name _____
Company _____
Address _____
City _____ State _____

The New Scythette POWER SCYTHE

Cuts WEEDS, GRASS, REEDS 4 TIMES FASTER THAN ORDINARY METHODS

NEW POWER • NEW ENGINEERING •

Now equipped with double power, double fuel capacity. Trims weeds on rocky or uneven ground. Cuts grass or weeds close to buildings. Clips reeds or underwater growth. Cuts with ease wherever a man can walk, wade, or row a boat. Equipped with 2 h. p. motor, 1-qt. capacity gas tank, 20-inch oscillating cutter bar. Weighs only 26 lbs.

a twist of the wrist and the SCYTHETTE becomes the

Sawette

America's most revolutionary chain saw cuts trees, or any growth up to 4" in diameter, level with terrain while operator is in upright position. Speedy, efficient, rugged, the Sawette is the answer to heavy growth clearing problems.

PRODUCT OF HOFFCO INC. RICHMOND, INDIANA

SCYTHETTE ONLY	$142.50
SAWETTE WITH SPECIAL BLADE	169.50
SAWETTE WITH SCYTHETTE	200.00

Karl Kuemmerling, Inc.

401 Cherry Ave. N. E.
Canton 2, Ohio

Spare That Tree

(Continued from Page 9)

an acceptable wound dressing will heal rapidly, thus restoring vitally necessary food and sap-conducting tissues essential to the continued good health of the tree. In many instances, where serious bark and root injuries have left untreated, we have found infestations of borers as well as evidence of wood-rotting fungi present. Both conditions are considerably more costly to correct later than if the simple preventive measures were applied.

It should be obvious to any good business man that trees which appear and are healthy and free of ugly wounds and scars will aid in the sale of the property and home. Also trees left in good sound condition will result in a satisfied home owner instead of a bitter

(Continued on Page 23)

DOW

BASAL BARK SPRAYING IS EFFECTIVE THE YEAR AROUND

DOW brush killers, applied to basal area, give better control than mechanical cutting

An example of successful basal bark treatment is shown here. Basal spraying of brush stems or tree trunks with Esteron® 245 or Esteron® Brush Killer in oil is more economical than cutting, and regrowth is reduced to a minimum. Basal treatment is done with a knapsack sprayer or with power equipment. It gives satisfactory kill results, regardless of the size of the brush or trees, provided that the basal areas are thoroughly drenched.

It should be remembered that basal bark spraying is effective during the summer months as well as in other seasons. It is especially useful as a follow-up to foliage treatment to control any resistant specimens and to take care of "misses" and new growths. Spraying cut stumps with either Esteron 245 or Esteron Brush Killer to prevent sprouting may also be done any time of year.

Inquiries from utility maintenance engineers, tree farmers and foresters on the selective control of weed trees with Dow brush killers will receive prompt attention. THE DOW CHEMICAL COMPANY, *Agricultural Chemical Department*, Midland, Michigan.

you can depend on ***DOW AGRICULTURAL CHEMICALS***

DOW

Grass Inhibition

(Continued from Page 8)

There is no drift or sprayer contamination problem with MH. The sprayer can be readily flushed free of the chemical. MH has a low toxicity with an oral LD 50 of 6.95 grams per kilogram for rats. Extensive toxicological studies now in progress show no apparent adverse effect on animals consuming 5 per cent MH as sodium salt incorporated in their daily diet in chronic feeding studies after one year and three months. Dairy cows feeding upon MH treated grass eliminated the chemical with none appearing in the milk.

Results of 1950 and 1951 trials have previously been summarized (Zukel, 1952). Some results of this past year will be discussed.

Fall Application of October, 1951

A 20 acre plot of median sprayed at 4 pounds MH (10 pounds MH-40) per acre on October 15, 1951, showed an even and delayed growth in the spring of 1952 with no adverse effect on appearance of the grass. Ten acres were inadvertently mowed by maintenance crews, but the balance, retreated at 4 pounds MH required one mowing during the season whereas adjacent check was mowed 17 times in normal maintenance practices. The basic grasses were Chewings New Zealand Fescue, Redtop and Kentucky blue grass. (Figure 2).

Spring Application, 1952

Plots treated at 4 pounds MH (10 pounds MH-40) per acre in early May inhibited growth for 6 weeks and then mowing was required, whereas 6 pounds MH (15 pounds MH-40) noticeably inhibited growth for 3 months before mowing was required. Roadside areas treated at 6 pounds (15 pounds MH-40) per acre in May inhibited grass throughout the season.

Summer Application, 1952

Summer application of 4 pounds MH (10 pounds MH-40) per acre inhibited grass for about 6 weeks and a 6 pound (15 pounds MH-40) per acre MH level inhibited the grass for the remainder of the season.

The effect of retreatments made at various intervals indicates that a cumulative effect is obtained if MH is applied to a plot which has not shown regrowth. Retreatment of areas which resumed normal growth exhibited the degree of inhibition expected of an application to a new area.

No herbicidal effects were noted in any of the plots nor has there been any noticeable reduction in stand of grass. Excessive dosages will produce a temporary browning of the grass. Some varieties of clover show a temporary purple anthocyanin coloration.

Root weights sampled from various plots showed no significant difference over checks. MH residue analyses of roots indicate that none or negligible quantities were present in roots the following season, unless the chemical is applied just prior to dormancy. There was no residual toxicity of MH in the soil and this confirms a recent detailed study by Levi and Crafts (1952) who found that MH either leached or decomposed in the soil.

SUMMARY

1. Application of MH is suggested only for established turf areas, two or more years old.

2. Since approximately 24 hours are required for complete absorption of an MH spray, rainfall records within this period will assist in interpretation of results.

3. A fall spray of 4 to 6 pounds MH (10 to 15 pounds MH-40) in not less than 40 gallons of water per acre applied to *green* turf is suggested. Mowing after application is not required.

4. An early spring application at 4 or 6 pounds MH (10 or 15 pounds MH-40) in not less than 40 gallons of water per acre applied to *green* grass when about 3 inches tall at start of growth offers results equivalent to fall treatment.

5. Summer spraying of 4 to 6 pounds MH (10 to 15 pounds MH-40) in not less than 40 gallons of water per acre inhibits grass but not to the degree resulting from either fall or spring treatment. If mowing is necessary to trim an area, one week after spraying should be allowed to elapse before mowing is made, for absorption and translocation of MH to roots.

6. Retreatment within the same season can be made after normal grass growth has resumed. No more than two applications in one season are recommended.

7. Presence of broadleaved weeds in plots will require inclusion of 2, 4-D as amine salt at locally recommended dosages.

LITERATURE CITED

LEVI, E and CRAFTS, A. S.
Toxicity of maleic hydrazide in California soils Hilgardia 21: 431-463, 1952

ZUKEL, John W.
Progress report on use of maleic hyhdrazide for grass inhibitition on highway areas. National Research Council, Highway Research Board Publication No. 222: 30-35, 1952

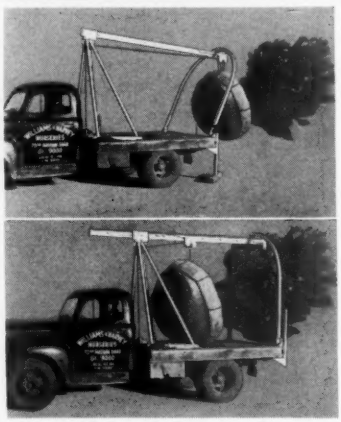
COMPLETE LINE OF TREE SURGERY SUPPLIES

BEAN Power Sprayers, McCulloch Chain Saws, Sales, Parts, Service.
Oregon Chipper Chains, Parts and Service.
Electric Drills repaired, all makes.

The best in tools and equipment for tree work.
The quickest and most dependable service.

Send for our catalogue and prices

Fruit Growers of Chester County, Inc.
West Chester, Pa.



Williams & Harvey Nurseries Announce

NEW TREE MOVER

- **New Light Weight**
- **Simpler to Operate**
- **New Sizes**
- **Quickly Demountable**
- **New Lower Costs**

This improved new tree mover fits any standard truck. Ready now. For price and details, write at once to

WILLIAMS & HARVEY NURSERIES
P. O. Box 7068, Country Club Sta.
Kansas City 13, Mo.

Cut spraying cost in half with...

HARDIE

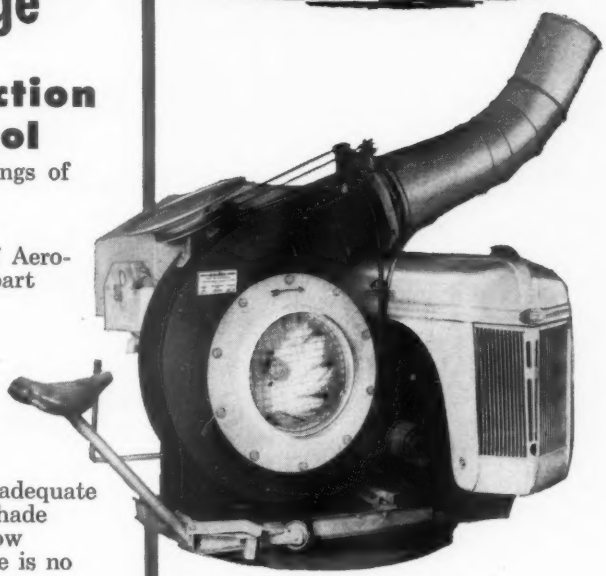
AERO-MIST

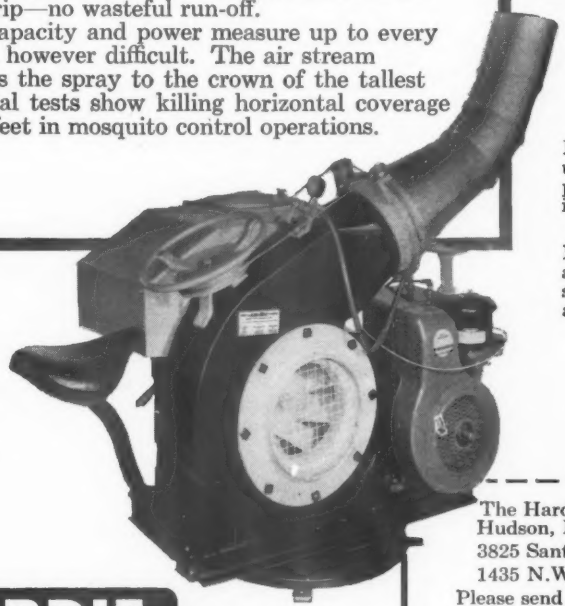
"Full Circle Coverage"

For Shade Tree Protection and Mosquito Control

- ECONOMY—Municipal records show savings of more than 50% in labor and material cost by Aero-Mist concentrate spraying.
- EFFICIENCY—"Full Circle Coverage" of Aero-Mist assures thorough application on every part and surface of trunk, branches, leaves.
- SPEED—Big volume high velocity air stream, finger-tip controls and 360° revolution of both entire sprayer and also air outlet make quick work of the biggest spray jobs.

With Aero-Mist any municipality can afford adequate shade tree pest control. Complete, lasting, shade tree protection is accomplished quickly, at low cost. Spray any place at any time for there is no damaging drip—no wasteful run-off.
Aero-Mist capacity and power measure up to every requirement however difficult. The air stream easily carries the spray to the crown of the tallest trees. Official tests show killing horizontal coverage up to 1000 feet in mosquito control operations.





TWO SIZES

Model L80—8000 cu. ft. air per minute at 150 MPH, 42 HP engine, high pressure pump, 53 gal. steel tank, 10 inch air outlet.

Model L40—4000 cu. ft. air per minute at 125 MPH, 13 HP engine, high pressure pump, 26 gal. steel tank, 8 inch air outlet.

Ask your Dealer

•

Use the coupon

HARDIE
PEST CONTROL EQUIPMENT
• SOLD AND SERVICED ALL OVER THE WORLD

Air Blast Sprayers, High Pressure Sprayers, Dusters, Rain Control Portable Irrigation Sprinkler Systems.

The Hardie Manufacturing Company,
Hudson, Michigan.
3825 Santa Fe Ave., Los Angeles 58, California
1435 N.W. Northrup St., Portland 9, Oregon.
Please send catalog.

Name_____

Address_____

City_____ State_____

I am especially interested in_____

How Tree Grows

(Continued from Page 7)

$6\ CO_2$
+
$6\ H_2O$
+
Energy
from
Sunlight
$C_6H_{12}O_6$
+
$6\ O_2$
Carbon
dioxide
Water
Sugar
Oxygen

Photosynthesis is widely rated as the world's most important chemical reaction. This process is the sole basis of man's food supply and a major factor in supplying both the raw materials and the energy of industry. Carbohydrates compose over three-quarters of the dry weight of woody plants, and they are the chief constituents of cell walls. Carbohydrates are the chief source of energy in plants and animals. They are the materials from which fat and protein synthesis start. They are also important as water holding compounds.

While photosynthesis goes on only during the day, respiration goes on in living cells during the day and night. Respiration might be defined as "oxidation of foods in living cells resulting in the release of energy." The process might be characterized chemically by reversing the arrow in the photosynthetic equation.

Foods (carbohydrates, fats and protein) are synthesized by the tree and *not* taken from the ground. Some foods are converted into other carbohydrates, fats or proteins. Some are assimilated or converted into new protoplasm. Some are "burned up" in respiration and furnish energy which is needed in cell processes. Some foods are digested or converted into simpler forms which can be translocated or moved from one part of the tree to another. And finally some foods are accumulated or stored in roots or in living tissues in the wood. Wood rays and parenchyma cells are common types of storage tissue.

Movement of foods and minerals as well as water takes place in trees in the xylem and phloem tissues. Most organic solutes move upward and downward through the phloem tissue while water ascends through xylem in the few outermost rings of sapwood. See Fig. 4.)

In addition to carbohydrates, fats and proteins, a number of mineral elements are necessary for proper functioning of trees. If minerals are not available in suffcient quantity, the chlorophyll may break down bringing about a yellowing or chlorosis. These minerals are necessary as building material from which parts of cells are constructed and for the proper production of the green pigment, chlorophyll.

Brief mention should be made of the necessity of maintaining a proper water balance in trees for adequate growth. Water is important to trees since it is a constituent of living protoplasm. Active protoplasm has a high water content and desiccation kills most protoplasm. Water is also important as a reagent in chemical reactions and as a medium in which reactions occur. It is important as a solvent in which substances pass in and out of cells and from place to place in a plant. It is also important in maintaining turgidity in leaves. This turgidity keeps stomatal pores open and make it possible for carbon dioxide to diffuse into the intercellular spaces of the leaves where it is used in the photosynthetic process.

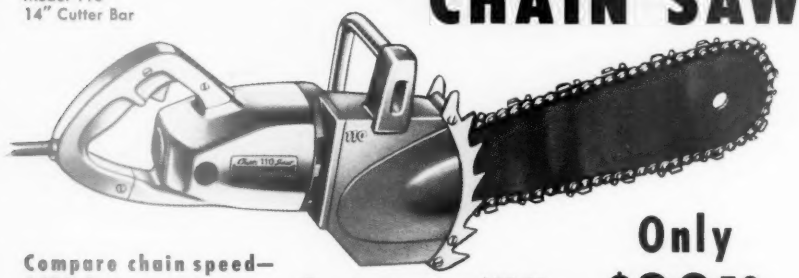
Trees normally require tremendous amounts of water during the summer and, unless adequately supplied, drought

(Continued on Next Page)

Fastest Cutting Lowest Priced

New!
PORTER-CABLE Electric
CHAIN SAW

Model 110
14" Cutter Bar



Only $99.50

Compare chain speed— 1400 feet per minute . . . Compare price—$99.50. Compare every feature of Porter-Cable's new, one-man chain saw and you'll find that it's best for tree work. A perfectly balanced 18 lbs. does all the work. You can actually hold it with one hand without fear of jump or kick-back, because the special log gripping teeth and action of the chain keep the saw pulling *into* the cut.

No servicing problems—design is simple and trouble-free. The hard-chromed, rust-resisting teeth on the Oregon® Chipper Chain stay sharp twice as long. The powerful 10 amp. motor gives dependable, even power on standard AC or DC outlets. Starts instantly in coldest weather with a simple pull of the trigger.

Two portable generators—AC or DC—also available

Does heavy limbing and cutting jobs easily. Light weight means less fatigue.

14" Cutter bar lets you handle trees as large as 28" in diameter.

MAIL COUPON FOR FULL DETAILS

Porter-Cable Quality Electric Tools

PORTER-CABLE Machine Co.
1344 N. Salina St., Syracuse 8, N. Y.
Please send complete description of your new lightweight, trouble-free Chain Saw . . . also name of nearest dealer.

Name .....
Address .....
City ..... State .....

PORTER-CABLE MACHINE CO., Syracuse 8, New York
Manufacturers of Speedmatic & Guild Electric Tools — In Canada write: Strongridge Ltd., London, Ont.

effects may bring about decreased growth. Excess loss of water causes loss of cell turgidity and results in wilting. Stomates may often close and cut off the entrance of carbon dioxide. This will decrease photosynthesis and growth.

Growth is really an outward manifestation of the rate at which certain metabolic processes; i. e., photosynthesis have been going on. These processes are conditioned by two interacting groups of factors. These are the genetic factors, which are determined by the heredity of the tree, and the environmental factors, which are determined by the habitat in which the tree is growing. The conspicuous differences between species as well as the less conspicuous differences between individuals of a species growing in a particular habitat are determined by heredity. At the same time fluctuations in the environment produce noticeable differences in tree behavior, such as in the size, thickness and color of leaves, and in the quantity and quality of wood. Environmental factors might be divided into (1) climatic factors (temperature, light, precipitation, humidity, wind, gases), (2) soil factors (aeration, texture, structure, origin, slope, organisms, acidity, etc.), and (3) biotic factors (man, insects, birds, grazing animals, rodents, etc.). Each of these factors, in one way or another, may influence tree growth.

Spare That Tree

(Continued from Page 18)

and disillusioned individual who will be a continual source of detrimental publicity.

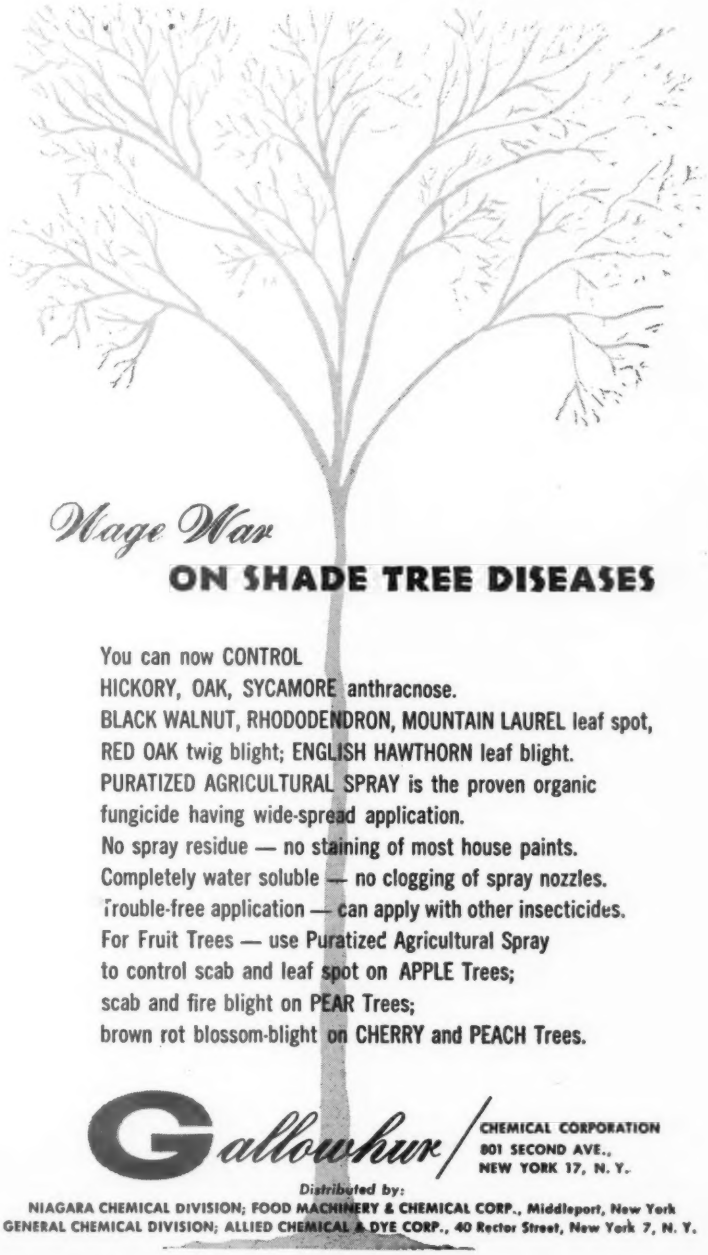
Arboricultural authorities vary in their opinion as to the importance of the following recommendation. However, we have not discussed it until now because the builder or developer cannot economically control the detrimental effects on the trees left after drastically thinning out a heavy woodland tract. Where possible, every effort should be made to retain the bed of woodland litter and humus on the soil surface present in all forests. It is also essential that an adequate number of trees be retained to provide a protective screen or shield to one another from the drying effect created by the sudden exposure to the wind and sun.

An alternative to leaving a sufficient number of trees standing as a shield to the wind and sun would be wrapping the remaining desirable specimens with burlap or a variety of papers used for this purpose. Such a procedure, however, could become expensive as well as impractical. Drastic changes in the natural environment of trees, especially in the thinning of woodlands, usually results in the death of the marginal or borderline trees, even two to three years after construction has been completed.

We believe that if some plan were devised by all developers to set aside a financial reserve or fund to take care of the removal of those trees on a homesite that have died within 18 months of the purchase of the home at no additional expense to the new property owner, better business and friendly relations between buyer and seller would result.

As mentioned earlier, where conditions make it economically impractical to preserve the trees through the use of the above recommendations, they should be removed before construction gets under way. Adequate plans should then be made to replace them with other trees suitable to the location in question. Not only would the replacement of the trees prove beneficial esthetically, but it is sound policy for many other reasons. It conserves moisture, prevents even simple erosion and provides a natural type of air or weather conditioning.

For additional information on this matter, we refer those interested to the many fine arboricultural books and leaflets published in recent years. One of the best treatments of this subject is in the Farmer's Bulletin No. 1967, published by the U. S. D. A.



Wage War

ON SHADE TREE DISEASES

You can now CONTROL
HICKORY, OAK, SYCAMORE anthracnose.
BLACK WALNUT, RHODODENDRON, MOUNTAIN LAUREL leaf spot,
RED OAK twig blight; ENGLISH HAWTHORN leaf blight.
PURATIZED AGRICULTURAL SPRAY is the proven organic
fungicide having wide-spread application.
No spray residue — no staining of most house paints.
Completely water soluble — no clogging of spray nozzles.
Trouble-free application — can apply with other insecticides.
For Fruit Trees — use Puratized Agricultural Spray
to control scab and leaf spot on APPLE Trees;
scab and fire blight on PEAR Trees;
brown rot blossom-blight on CHERRY and PEACH Trees.

Gallowhur / CHEMICAL CORPORATION
801 SECOND AVE.,
NEW YORK 17, N. Y.

Distributed by:
NIAGARA CHEMICAL DIVISION; FOOD MACHINERY & CHEMICAL CORP., Middleport, New York
GENERAL CHEMICAL DIVISION; ALLIED CHEMICAL & DYE CORP., 40 Rector Street, New York 7, N. Y.

PLANT AMERICA—WISELY

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

National Arborist Association Winter Meeting

The National Arborist Association held its second winter meeting at Hotel Warwick, Philadelphia, February 2 and 3, with an attendance of 60. Fifteen states—California, Connecticut, Florida, Maine, Maryland, Massachusetts, Nebraska, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Texas, Virginia and Wisconsin—were represented.

The Board of Directors held its mid-year meeting during the morning of February 2 and the general meeting convened in the afternoon.

Panel on Obtaining Help

A panel discussion of the problems of obtaining and keep good help brought out many interesting comments. Oscar Warner, Waterbury, Connecticut, served as panel chairman, and other members were Ray Gustin, Jr., Gustin Landscape & Tree Service, Silver Spring, Md.; Gerald Corr, Blume System Tree Experts, Houston, Texas; and Bernard Swisher, Swisher Tree Service, Spencerville, Ohio. It was agreed that arborists will have trouble keeping good help as long as there is such keen competition for labor from defense and some other types of industry. Unemployment bureaus and newspaper ads are usually of little value in obtaining help. Present employees will often find more help for their employer than he can obtain in most other ways.

The use of more mechanical equipment to replace labor was considered. In the tree trimming field air-powered pruners used with equipment such as the Skylift and Mechanical Monkey are being pioneered. The wood chipper seems established where the disposing of brush is a problem. To what extent the Skylift and Mechanical Monkey can be used in line clearance remains to be seen. Apparently such equipment does reduce the man hours but the quality of the work may be below that which can be done by men in the trees.

Tree Moving

The subject of tree moving was discussed by George Lewis, Media, Pennsylvania; William Luckner, Jr., Stepney, Connecticut; and H. M. Van Wormer, Richmond, Virginia. Hog wire (woven wire fencing) was advocated by Van Wormer to bind the ball and replace drum lacing of the ball. According to Van Wormer, this method is just as good as, and is much faster than, drum lacing. Van Wormer has developed a new tree mover.

Banquet

At the banquet, Monday evening, W. C. "Tom" Sawyer, Vice-president, Freedoms Foundation, Valley Forge, Pennsylvania, gave a most inspiring talk. Mr. Sawyer urged that everyone work for honest and efficient government — government which holds man's freedom as a sacred trust and not something to be gradually dissipated leading finally to enslavement.

Dr. L. C. Chadwick, Ohio State University, showed excellent kodachrome slides and described his trip to European countries last fall.

Tuesday morning's program proved an interesting and varied one. Karl Amalia, Amalia Tree Surgeons, Manchester, Massachusetts, and Ira Wickes, Tree and Shrub Specialist, Suffern, New York, described unusual landscape and tree planting operations.

Accident Prevention

Hackett Wilson, Wilson Tree Company, Shelby, North Carolina, stressed the vital need for more attention to safety in tree work. A study of recent accidents to tree workers reveals many kinds of accidents ranging from those causing minor injuries to those causing severe injury and death. In addition to the pain and suffering caused by accidents they are very costly. Over and above high insurance rates are hidden costs which go with every accident. These hidden costs are lost time paid the injured worker, lost time of other employees who assisted the injured, errors and low production of the poorly trained replacement, and many others. The employer pays these costs on every accident. On minor accidents the hidden costs paid by the employer may easily amount to more than the expense paid by the insurance company.

Accidents are terrifically expensive. We can't afford to have them and to stay in business we must do everything within our power to reduce them.

Albert W. Meserve, Danbury, Connecticut, told of using his tree spraying equipment for killing submerged weeds in lakes and ponds. Most types of these weeds can be killed by spraying the area with a sodium arsenite herbicide. Sodium arsenite is heavier than water and will sink to submerged vegetation when sprayed on the pond surface. The proper concentration will kill the weeds and not injure fish. (A bulletin "Control Weeds in Ponds and Lakes" is available from The Chipman Chemical Company."

John Woodruff, Waterbury, Connecticut, gave an excellent summary of the information on herbicides and their use in chemical brush control. Good kodachrome slides illustrated different methods of application and results.

President Sidney McNeal adjourned the meeting at noon Tuesday.

New Member

The most recent new member of the National Arborist Association is Hiram D. Deeks, Sea Cliff, Long Island, New York.

New Invention Fails to Control Insects in Ohio Tests

An invention whose sponsors claimed it would control harmful insects by electronically-produced waves has failed to do so in scientific tests, the Ohio Agricultural Experiment Station announced today.

Tests were run on the invention by station entomologists at the request of the Ohio Farm Bureau, which obtained rights to the machine in Ohio during 1952 to make the experiment possible.

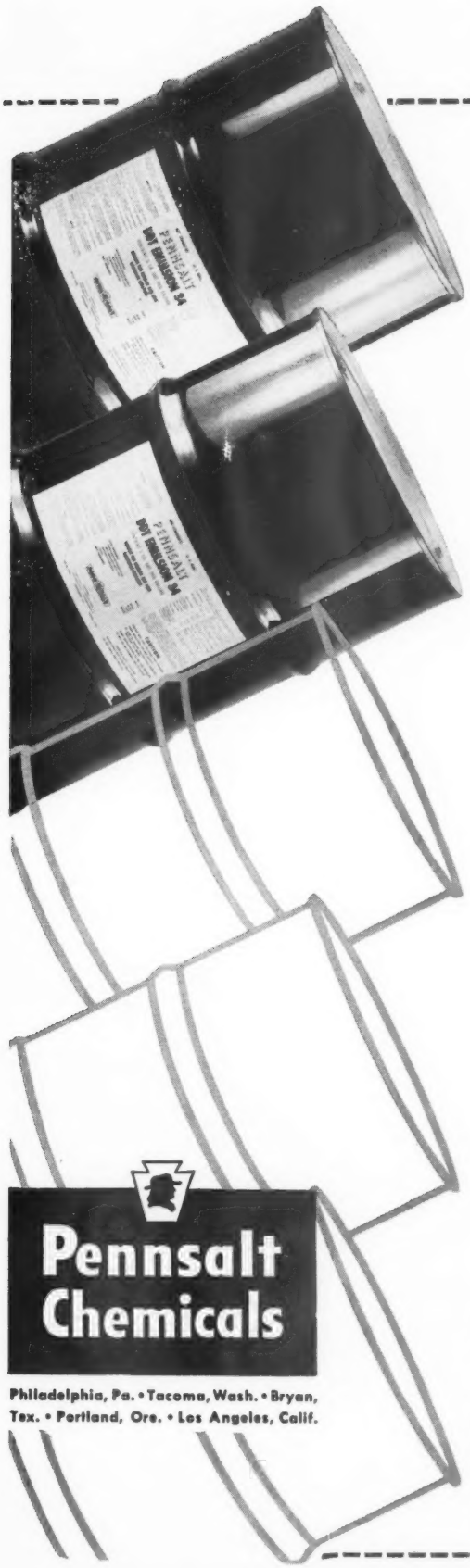
When the machine was first discussed in Ohio, there was a possibility that its services would be sold farmers. Consequently, the Ohio Farm Bureau took steps to have the machine tested before it was put into public operation.

Station entomologists tested the machine against meadow spittlebugs, Japanese beetles, European corn borers, corn earworms and apple aphids. They reported, "The invention's ability to kill or control insects has been disproved in tests thus far."

Operation of this invention included placing an aerial photograph of an insect-infested field or orchard, plus a chemical, into the machine. When in operation, the machine would transmit waves to the infested areas designated in the photograph, these waves being supposed to either kill or drive off the insects.

Further tests are to be made and a full report of results issued, but the entomologists emphasize that their investigations thus far do not substantiate claims for the invention.

The Last Friday in April is Arbor Day



2 Drums of Pennsalt DDT Emulsion 34 have the effectiveness of 3 Drums of 25% emulsion!

Why buy 3 when 2 will do the job?

In every gallon of Pennsalt DDT Emulsion 34 there are *three full pounds* of DDT. As a result, two drums of E-34 are as effective as three drums of ordinary DDT emulsion!

For sprayers, this means less solvent used per pound of DDT, less run-off or drip of active insect-killing material. You also handle less, transport less, store less.

You'll find Pennsalt E-34 is a stable emulsion that mixes easily with hard or soft water, and can be used in all types of equipment. It is convenient, economical, highly effective. Try it and you'll use it regularly! To get complete information on E-34, mail the coupon today for a free Pennsalt service bulletin.

Pennsalt Chemicals

Philadelphia, Pa. • Tacoma, Wash. • Bryan, Tex. • Portland, Ore. • Los Angeles, Calif.

FOR MIST BLOWERS —Pennsalt E-34 is ideal. It contains less solvent per pound of DDT, thus solvent-damage to foliage is minimized. Has excellent "carry," needs no white oil (although an oil carrier may be added if desired). Stores well at low temperatures. Mixes easily, and forms a stable emulsion in all proportions. FREE BULLETIN. Latest information on mist blower application of E-34. Use coupon at right.

Agricultural Chemicals Dept.
Pennsylvania Salt Manufacturing Company
262 Widener Bldg., Philadelphia 7, Pa.

Please send me free

☐ *Bulletin #201 on hydraulic application.*
☐ *Bulletin #128 on mist blower application.*

Name.....

Address.....

City..... **State**.....

Authors and Books

The following books may be ordered from TREES Magazine, 7621 Lewis Road, Olmsted Falls, Ohio.

400 PLANTS OF SOUTH FLORIDA, by Julia F. Morton and R. Bruce Ledin. Text House, Coral Gables 34, Florida. 134 pages illus. $3.50.

Describes More Than 400 Trees, Shrubs, Vines and Herbaceous Plants, exotic and native—flowering, fruiting, or ornamental in foliage or form—the majority of those cultivated in the gardens of South Florida (and many in Central and North Florida, too), as well as the more noteworthy wild plants seen by the wayside, on the beaches and on the Florida Keyes.

400 Simplified "Word Pictures," Accurate But Not Technical, aid the plant lover to identify and name the plants. In highly condensed form, they also tell of ornamental values, edible and poisonous characteristics and medicinal and other uses.

Visitors and Residents have for years asked questions concerning South Florida's almost bewildering variety and array of subtropical and tropical plants, so different from the vegetation of the greater part of the United States. "What is the name of this plant?", "Where is it native?", "What is its value?"—To find the answers, it has been necessary in the past to search through a dozen or more unrelated books. Here they are assembled for the first time in one volume.

In alphabetic order, the descriptions are arranged under the preferred botanical names of the plants, while their popular common names and important botanical synonyms are shown in a comprehensives index of 1310 entries.

Invaluable to Botanist, Horticulturist and Nurseryman, to Garden Club Member and Amateur Gardener . . . a necessary guide for the student and visiting plant collector . . . an attractive and appropriate souvenir of South Florida's outdoor beauty!

Is The First Book to make available for quick reference, concise information on the most commonly met with trees, shrubs, vines and Herbaceous plants of South Florida—and some of the rare as well. Many are also common in the islands of the West Indies, in Mexico, Central America and in northern South America.

Both Native and Introduced, they range from the fragant crinum lily and charming butterfly orchid, glowing flame vine and purple-blooming queen's wreath to the ubiquitous and sunny yellow elder; from the dense-foliaged shrubs grown for hedges, to the bronze-barked gumbo limbo, the sausage tree with its odd fruit, the coastal mangrove with its stilt-like roots, the wide-spreading ficus trees and beautiful palms!

The Authors, Julia Morton, Vice-Director of the Morton Collectanea of the University of Miami, and Dr. R. Bruce Ledin, Asst. Horticulturist at the Subtropical Experiment Station of the University of Florida, have the advantage of personal familiarity with the plants in the extensive collections of both institutions, as well as with specimens studied on field trips and surveys. They have presented the identifying features of the plants as they appear to the eyes of the average observer, without intricate or technical detail.

28 Full-Page, Pen-and-Ink Drawings by Dr. Frank D. Venning, In Charge, Swingle Research Project, University of Miami, not only afford ready recognition of the species pictured, but are outstanding for their verity and aristic appeal.

400 Plants of South Florida is printed on a tinted paper recommended as reducing eyestrain. Its heavy cloth binding is impregnated for mildew- and vermin-resistance and may be cleaned with a damp sponge.

WOOD PRESERVATION, by George M. Hunt and George A. Garratt, McGraw-Hill Book Co., Inc., New York. 417 pages. Illus. $7.50.

Here is a thoroughly revised and modernized edition of an authoritative text and reference work. Each chapter has been extensively reworked to bring the text astride the many changes and advances in wood-preserving materials and methods developed since the publication of the first edition. New preservatives and testing methods have been added for this purpose, along with the deletion of obsolete material, and the addition of new references and illustrations.

This text is the only book in its field to present a well-balanced discussion of the subject in its entirety with the inclusion of all aspects in a comprehensive and over-all view.

With this broad and inclusive view in mind, the authors have covered the field thoroughly under the following organization: the natural durability and treatability of different woods; descriptions of the important fungi and insects that destroy wood in storage and in use; descriptions of the more common wood preservatives and of methods of evaluating preservatives; protection of logs and lumber from deterioration during the seasoning and storage processes; preparation of timber for treatment; methods of treating wood with preservatives; the effect of treatment in wood properties; equipment and operation of treating plants; fireproofing chemicals and methods; and the economic aspects of wood preservation.

This is a text of utmost value to the student of forestry and wood utilization, to the purchasing agent and engineer concerned with usage of wood, and to those interested in development and promotion of new materials and methods.

AMERICAN TREES—A BOOK OF DISCOVERY, by Rutherford Platt. Dodd Mead and Co. New York. 256 pages. Illus. $3.50.

This book is called *American Trees* because, for the first time in a book of this sort, it covers the trees of all parts of the United States and welcomes, in addition, the foreign-born trees which are usually not considered "American." Virtually all other tree books are limited to the Northeastern states, neglecting the most majestic forests of our continent—the great pines and cedars of the Northwest; the spectacular trees of California, redwoods, eucalyptus; the strange trees of the Southwest desert; and the exotic trees of southern Florida. All of these are here for any traveler or reader to become acquainted with.

It is called "A Book of Discovery" because it is filled with the wonder and surprise of trees. What tree has no leaves? What single tree would make one hundred small homes? What wood burns brightly when green? What bark is as lasting as rock? Which tree flourishes best in cities? Here is no dry recital of details and distinctions, but rather a parade of tree personalities, each one as different an individual as are your friends and neighbors.

The book is illustrated throughout with careful and delightful drawings made from original materials—not taken from previous books—making identification easy as well as interesting. An ingenious new kind of Identification Guide, geographical groupings and a full index make the book wonderfully practical. There is a generous section of thirty-two pages of the author's superb photographs and eight pages containing twenty-one color plates.

Rutherford Platt, author of *This Green World* and *Our Flowering World* and winner of John Burrough medal and the Eloise Payne Luquer medal awarded by the Garden Club of America, is one of the oustanding nature writers of our day. Trees have always been his first and greatest love. This book blazes a new trail among tree books as his others did in their fields. To it he brings all his wide range of knowledge, his fertile imagination and his inexhaustbile enthusiasm.

WOODSMOKE, by Ellsworth Jaeger. The Macmillan Co., 60 Fifth Ave., New York 11. 228 pages. Illus. $2.95.

For the outdoor camper, *Woodsmoke* shows, step by step, useful crafts and camping skills. Anyone who has felt the lure of the woods and fields will find in it invaluable short cuts, tips and sound advice.

From the Indians, Mr. Jaeger has learned ingenious ways of smoking meat, making a raccoon cap, compounding medicines, making winter socks and mittens, and stalking, luring and calling various animals. In passing this information on to the reader, he gives the Indians' own directions, including the exact ways of imitating many animal calls.

Other sections discuss the building of all types of shelters; the building, use and care of fires; the use and care of the ax; and the art and sport of fishing. One especially helpful chapter lists a number of camping tricks. Mr. Jaeger explains easy methods for cooking and dishwashing in the open; he suggests meals suitable for campers. He tells how to make a duffel bag, estimate the temperature without a thermometer, and measure the height of trees.

Almost 130 full page drawings by the author clearly illustrate the directions in the text. Indian folklore and anecdotes enliven the book.

New Homelite Generator

A new Dual-Voltage 5 Kilowatt carryable generator, designed to meet modern industry's growing needs, has been announced by Homelite Corporation, Port Chester, New York. The new generator, Model 32A115/230-1, will carry a continuous load of 5,000 watts, single-phase, 60 cycle alternating current at either 115 or 230 volts. It is a carryable generator with enough power to start and operate a great variety of electric tools and equipment such as electric saw, grinders, drills, routers, tampers, in the construction and transportation fields, and for emergency lighting and standby power for municipalities, communication companies, farms, homes, etc.

A 115 volt AC standard convenience outlet is supplied, together with a special water-proof 3-pole receptacle for connecting either 115 or 230 volt motors, tools and appliances. Driven by a Homelite Model 32 gasoline engine, the generator has specially impregnated armature and coils to give high resistance to oil, moisture, and abrasive dust.

THE O'BRIEN STUMP REMOVER

The O'Brien Stump Remover Operated by the Toledo, Ohio, Div. of Forestry

A powerful answer to one of the slowest and costliest of municipal Street Tree problems.

Comprising power with a finely tooled series of three cutting bits—2", 8" and 15" in diameter.

This new development will cut stump removing costs to unbelievable low figures.

Write for Showing of a Special Movie—See This Cost-Cutting Machine in Action.

The O'Brien Stump Remover Co.

90-39 54th Ave. **Elmhurst 73, New York**

RETURN POSTAGE GUARANTEED
Trees Magazine, 7621 Lewis Rd.
Olmsted Falls, Ohio

Postmaster: If addressee has moved and new address is known, notify sender on Form 3547, postage for which is guaranteed.

Sec. 34.66 P. L. & R.
U. S. POSTAGE
PAID
Olmsted Falls, Ohio
Permit No. 12

Guaranteed—To Produce Chlorophyll

7 REASONS "GREEN THUMB" ASSURES YOUR BECOMING A GREENTHUMB USER

1. 97% pure, organic sedge reed, bacterially high content.
2. One cubic foot makes upward to 50 cu. ft. of good soil, or 15 cubic feet of rich organic soil.
3. Excellent natural nitrogen—readiness to use—going to work at once.
4. Delightful flowing into the soil in handling—uniform structure creates maximum economy.
5. Normal moisture holding, with gradual delivery only to soil and plants assure the maximum in plant development.
6. A product processed, based on 30 years proven continuous operation, has a ph of 4.5 to 5.5, that is quickly, easily and economically adjusted to needs of any plant material.
7. The most efficient and economical soil building nature product in existence.

"Green-Up America With Green Thumb Peat"

GREEN THUMB PEAT-HUMUS CO.

CAPAC, MICHIGAN

EASTERN DISTRIBUTOR:

F. N. PRICE SUPPLEE, 1014 GIRARD TRUST BUILDING, PHILADELPHIA 2, PA.